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TABLE OF CONTENTS

ORIGINAL ARTICLES : Page

1. The Action of Chloramphenicol on Antibodies Against *S. Typhi*—C. Mohan Rangam ... 41
2. Human Brucellosis—S. Soman and G. Kothari ... 44
3. Neurosyphilis—The Common Types in Hyderabad—S. Venkateswara Rao 48
4. Discrepancies in the Tetanus Antitoxin Titration—M. C. Ray Chaudhuri 51

REFRESHER COURSE :

1. Prevention of Diphtheria—D. C. Lahiri ... 53
2. Management of Diphtheria—S. C. Chatterjee ... 57

PRACTITIONERS' SERIES :

Trichloroethylene : A Suitable General Anaesthetic in Rural and Private Practice—M. V. Ramarao ... 60

CASE NOTES : Page

1. An Obstinate Case of Cerebral Malaria—Surjya Kumar Bhowmick 61
2. Pulmonary Amoebiasis Masquerading as Pulmonary Tuberculosis—P. N. Deb 62

EDITORIALS :

1. Mites and Tropical Eosinophilia 64
2. District Health Centres 65

CURRENT MEDICAL LITERATURE 66

CURRENT TOPIC :

Employees' State Insurance Scheme (Medical Benefit) Service or Panel System—Chamanlal Mehta ... 68

NOTES AND NEWS 70

CORRESPONDENCE 71

REVIEWS 72

YOUR QUESTION 72

SUPPLEMENT :

I. M. A. Working Committee 73

Branch Notes 79

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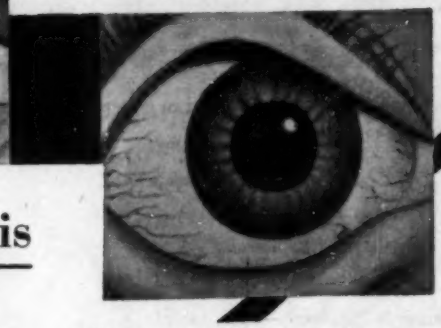

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[1]Scheie, H. G., Tyner, G. S., Buesseler, J. A., and Alfano, J. E., *J.A.M.A. Arch. Ophth.* 45:301, March 1951.
[2]Leopold, I. H., Purnell, J. E., Cannon, E. J., Steinmetz, C. G., and McDonald, P. R., *Am. J. Ophth.* 34:361, March 1951.

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INDEX TO ADVERTISERS

	Page
Alembic Chemical Works Co., Ltd.	xxiv
Allen & Hanburys Ltd.	xix
Alkaloid Research Laboratories Ltd.	xxvi
Amalgamated Chem. & Dystuffs Co. Ltd.	xxi
Bengal Immunity Co. Ltd.	xxi
Burmah Shell	xxvii
Bengal Chem. & Pharm. Wks. Ltd.	Front Cover
Calcutta Chemical Co., Ltd.	3rd Cover
Calcutta Polyclinic Ltd.	xxiii
Capco Ltd.	xi
Chemical Association	xxvi
Cilag-Hind Ltd.	xv
Cipla Ltd.	xviii
Current Technical Literature Co. Ltd.	viii
Crookes Laboratories Ltd.	xiii
Dumex Ltd.	xxii
East India Pharmaceutical Works Ltd.	xx
G. D. A. Chemicals Ltd.	3rd Cover
Gluconate Ltd.	xxiii
Horlicks Ltd.	xiv
Imperial Chemical Industries (I) Ltd.	2nd Cover
Indo-French Pharmaceutical Co.	iii
Industrial & Prudential Assn. Co. Ltd.	xxvi
John Wyeth & Brother Ltd.	xxviii
Lederle Laboratories (India) Ltd.	i
Lever Brothers (India) Ltd.	vii
Lingnaphone Institute (India) Ltd.	xiv
Merck & Co., Inc.	ii
May & Baker Ltd.	ix
Navaratna Pharmaceutical Laboratories	xxvi
Neo-Pharma Ltd.	xvii
Nestle's Products (India) Ltd.	x
Orient Longmans	viii
Oriental Research & Chemical Laboratories Ltd.	xii
Opil Ltd.	xxvii
Pfizer, International Co. Inc. (Ravison Pharmaceuticals Ltd.)	xxv
Philips Electric Co. (India) Ltd.	xvi
Pastuer Laboratories Ltd.	xvii
Sanitex Chemical Industris Ltd.	xxiii
Scientific Publication Concern	viii
Standard Pharmaceutical Works Ltd.	iv
Voltas Ltd.	v
Winthrop Products (Dey's Medical Stores)	vi
W. T. Suren & Co. Ltd.	viii
Zandu Pharmaceutical Works Ltd.	xii

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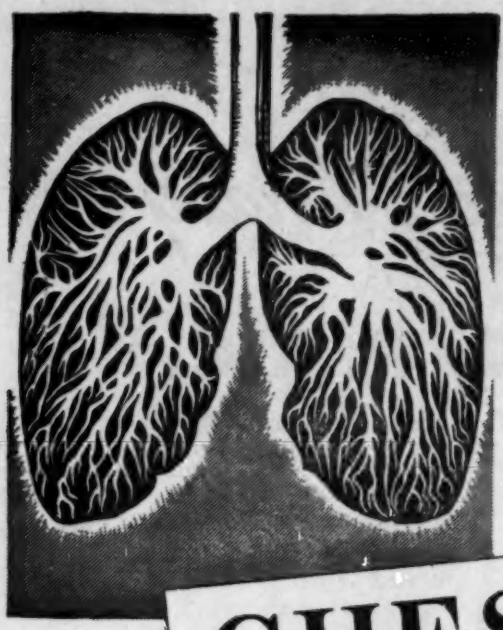

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Journal of the Indian Medical Association

VOL. 24, No. 2 — CALCUTTA — OCTOBER 16, 1954

PUBLISHED TWICE A MONTH

ORIGINAL ARTICLES

THE ACTION OF CHLORAMPHENICOL ON ANTIBODIES AGAINST *S. TYPHI* *IN VIVO* AND *IN VITRO* STUDIES

C. MOHAN RANGAM,

Department of Pathology and Bacteriology,
Mahatma Gandhi Memorial Medical College, Indore.

Many workers have attempted to study the effect of chloramphenicol on the agglutinating titres of sera, in cases of typhoid fever. These studies have been largely prompted by the suggestion that chloramphenicol impedes the development of immunity in this disease.

Subrahmanyan (1952) studying 11 cases treated with chloramphenicol, the first week onwards, observed that the level of agglutinin in the blood was nil or very low. Kiledjian (1949) on the contrary, reported a rising titre in a case of typhoid fever during chloramphenicol therapy. De and Bhuttacharya (1953) noted that when chloramphenicol was administered to rabbits, from the commencement of a course of vaccine injections, no fall was observed in the titre. They observed a fall in titre, where chloramphenicol was started during the middle of the course.

In view of the conflicting beliefs held, regarding the effect of chloramphenicol on the titre of agglutinins in typhoid fever, the following experiments have been performed.

MATERIALS AND METHODS

In all the experiments, Rawling strain of *Salmonella typhi* was used. The rabbits employed were bred in our laboratory and weighed 1·5 to 1·7 kg. Chloramphenicol* was administered to rabbits orally, per catheter, as freshly prepared watery suspensions. The technique employed in all agglutination reactions was that of Dreyer. The antigens used were 'H' and 'O' suspensions of *S. typhi*, prepared in our laboratory according to the technique described by Mackie and McCartney (1949).

* The brand used was Chloromycetin—Parke, Davis & Co., Ltd.

THE EFFECT OF CHLORAMPHENICOL ON THE AGGLUTINATING TITRE OF RABBIT SERA

Four pairs of rabbits were employed, 3 pairs serving as experimental groups and the 4th as a control. All groups received intramuscular injections of heat-killed *S. typhi* on the 1st, 5th and 10th days, in doses of 50^6, 100^6 and 200^6 organisms, respectively. Group I received 80 mg. of chloramphenicol per day, in 4 equal six-hourly doses, from the 1st day of the experiment. Group II received chloramphenicol similarly, the 5th day onwards and Group III the 10th day onwards. The control group received none.

TABLE I—SHOWING AGGLUTINATING TITRES IN RABBITS RECEIVING INJECTIONS OF HEAT-KILLED *S. typhi* AND CHLORAMPHENICOL

Group No.	*Average Agglutinating Titres* Before expt. H	O	5th day H	O	10th day H	O	15th day H	O
I	12·5	nil	187·5	25·0	1,750	25	1,750	25·0
II	25·0	12·5	125·0	12·5	2,500	150	1,750	50·0
III	37·5	12·5	250·0	nil	3,750	75	3,000	12·5
IV (Control)	25·0	nil	187·5	12·5	1,750	25	3,750	37·5

A Widal test was performed on each of the rabbits before the start of the experiment and later, on the 5th, 10th and 15th days, when the experiment was concluded.

It would appear from Table I, that animals receiving chloramphenicol do not develop titres as high as control animals, the difference being greater, the earlier the commencement of the drug. Further, all animals receiving chloramphenicol show either stationary or declining titres after the tenth day.

The Effect of *in vitro* Treatment of Rabbit Immune Serum with Chloramphenicol

Two rabbits received injections of heat-killed *S. typhi* in doses of 50^6, 100^6 and 200^6 organisms on the 1st, 5th and 10th days respectively. On the 15th day, their sera were tested for their agglutinating titres against *S. typhi*. Five ml. volumes of each serum were incubated at 37°C. with 250 µg. of chloramphenicol and also without chloramphenicol. Both samples were tested for their titres at intervals of 24, 48 and 72 hours. The results are as shown in Table 2.

Table 2—Showing Effect of *in vitro* Chloramphenicol Treatment on Rabbit Immune Sera

Rabbit No.	Initial titres	*Titres after Incubation* With chloramphenicol 24 hrs.	48 hrs.	72 hrs.	Without chloramphenicol 24 hrs.	48 hrs.	72 hrs.
1	1,900	1,400	1,200	1,100	1,900	1,900	1,900
2	2,400	2,000	1,700	1,400	2,400	2,400	2,400
Average	2,150	1,700	1,450	1,250	2,150	2,150	2,150

It is apparent that incubation with chloramphenicol causes a progressive decline in the titres of rabbit immune sera whilst incubation alone does not affect them in 72 hours.

The Effect *in vitro* Treatment of Human Immune Serum with Chloramphenicol

Six young healthy volunteers were each given two intramuscular injections of heat-killed *S. typhi* in doses of 500^6, and 1000^6 respectively at an interval of 6 days. Six days after the second injection, their blood were tested for their agglutinating titres. As in the previous experiment, each of the sera was retailed in 5 ml. volumes and incubated at 37°C. with 250 µg. of chloramphenicol and also without it. Both samples were tested for their titres at intervals of 24, 48 and 72 hours. The results are as shown in Table 3.

Table 3—Showing Effect of *in vitro* Chloramphenicol Treatment on Human Immune Sera

Volunteer No.	Initial titres	*Titres after Incubation* With chloramphenicol 24 hrs.	48 hrs.	72 hrs.	Without chloramphenicol 24 hrs.	48 hrs.	72 hrs.
1	800	500	400	300	800	800	800
2	125	100	50	25	125	125	125
3	700	400	300	200	700	700	700
4	200	150	75	50	200	200	200
5	200	125	75	50	200	200	200
6	400	200	150	125	400	400	400
Average	404	246	175	125	404	404	404

Human sera like rabbit sera, suffer a definite loss in titre due to incubation with chloramphenicol.

The Effect of Chloramphenicol on the Antigenecity of Live and Heat-killed *S. typhi*

Five ml. volumes of 18-hour-old broth cultures of *S. typhi* were incubated with 250 µg. of chloramphenicol for 24 hours and centrifuged thereafter. The deposit of organisms was suspended in sterile isotonic saline and centrifuged. This process was repeated seven times to secure a thorough washing of the organisms. Each of two rabbits received 300^6, 500^6 and 1000^6 organisms on the 1st, 5th and 10th days respectively, by intramuscular injections. The agglutinating titres of the rabbits sera were estimated on the 1st, 5th, 10th and 15th days.

In a parallel experiment, 18-hour-old agar slope cultures were suspended in 5 ml. of sterile isotonic saline and killed by heat at 60°C. for 2 hours. The suspension was incubated for 24 hours with 250 µg. of chloramphenicol and washed as before. Two rabbits were injected with the organisms exactly as in the previous experiment and their agglutinating titres estimated. Two control animals received similar injections of heat-killed organisms untreated with chloramphenicol.

Results in Table 4 do not suggest that chloramphenicol reduces the antigenicity of live or heat-killed organisms.

TABLE 4—SHOWING THE EFFECT OF *in vitro* CHLORAMPHENICOL TREATMENT ON THE ANTIGENICITY OF LIVE AND HEAT-KILLED *S. typhi*

Group	Organism used	*Average Agglutinating Titres*							
		Before expt.		5th day		10th day		15th day	
		H	O	H	O	H	O	H	O
I	Live	12·5	nil	750·0	625·0	2,500	1,000	5,000	2,500
II	Killed	12·5	nil	187·5	37·5	1,750	87·5	5,000	250
III	Control	25·0	nil	375·0	37·5	1,750	187·5	3,750	375

DISCUSSION

Chloramphenicol has been observed by many to lower the agglutinating titres in the human as well as in rabbits. The experiments performed here, confirm that the drug lowers the maximum titres attainable by rabbits receiving injections of heat-killed *S. typhi*, this effect being more appreciable, the earlier the drug is administered.

De and Bhuttacharya (*loc. cit.*) observed that the drug caused an alteration of the titres in rabbits only when it was commenced in the middle of a course of *S. typhi* vaccine, suggesting thereby that rabbits reacted to chloramphenicol differently from human beings who showed an alteration in titres only when the drug was administered from the beginning of typhoid fever. Results obtained here are not in complete agreement with those of De and Bhuttacharya in that a significant effect of the titres was observed in all the rabbits, irrespective of the drug being administered on the 1st, 5th or 10th day.

Strikingly enough, in all cases the fall or an arrest in the rise of titres was observed after the 10th day, suggesting thereby that the effect of the drug does not become apparent during the most active phase of antibody production. Is it possible that chloramphenicol affects antibodies directly and that this effect is adequately compensated during the first 10 days by production of further antibodies? The results of *in vitro* experiments indeed point in this direction. Both human and rabbit immune sera suffered a very definite fall in their titres due to incubation with chloramphenicol whilst the same sera incubated without chloramphenicol suffered none, over a corresponding period.

It is possible that chloramphenicol either destroys the specificity of the antibodies or enters into a physical union with them through adsorption. The latter appears more likely. This question is under investigation.

Antibiotics are well-known to induce morphological changes in bacteria. Many have suggested that antigenic changes are also likely. Voureka (1951) reported that *in vitro* treatment of cultures of *B. coli*—D 433 with a combination of chloramphenicol and the specific antiserum induced morphological variations and slight change in antigenic structure. Subrahmanyan (1952) suggested that the low titres observed in cases of typhoid fever receiving chloramphenicol was perhaps due to denaturation of the antigens of *S. typhi*. The results of *in vitro* experiments lend no support to this suggestion, treatment of living and heat-killed *S. typhi* with chloramphenicol in no way affecting their antigenicity.

SUMMARY AND CONCLUSION

1. Chloramphenical lowers the maximum titres attainable by rabbits receiving injections of *S. typhi* vaccine, and the results obtained suggested that the drug might act directly on antibodies. *In vitro* incubation of rabbit and human immune sera with chloramphenicol confirmed this suggestion.

2. *In vitro* incubation of living and heat-killed *S. typhi* with chloramphenicol did not alter its antigenicity.

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REFERENCES

DE, S. P. AND BHUTTACHARYA, S.—*J. Indian M. A.*, **22**: 144, 1953.

KILEDJIAN, Y.—*Lancet*, **2**: 629, 1949.

MACKIE, T. J. AND MCCARTNEY, J. E.—Handbook of Practical Bacteriology, 6th Edn., 1949, p. 239.

SUBRAHMANYAN, P.—*J. Indian M. A.*, **22**: 99, 1952.

VOUREKA, A.—*Lancet*, **1**: 28, 1951.

HUMAN BRUCELLOSIS

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Brucellosis is an infection caused by gram-negative cocco-bacilli in animals chiefly cattle, sheep and goats. The disease is transmitted to human beings through drinking raw milk from such infected animals, and to those handling the infected carcases and workers in such occupations as tanneries are in immediate contact with infected materials.

The human infection may be latent, acute or chronic febrile type. The febrile disease is described under various names such as, Malta fever, abortus fever, undulant fever, etc. In this paper we are presenting some preliminary data in connection with determination of incidence of human brucellosis in and around Bombay.

As far back as 1889 and 1905 the detection of agglutinins and occasional isolation of *Brucella* organisms has been reported particularly in Northern India in military population. Since 1938 cases have been reported from India in civil population. In some the diagnosis was based on agglutination test alone and in the others it was confirmed by isolation of the organism. The strains of *Brucella* isolated usually were *Br. abortus* and sometimes *Br. melitensis*. It is suggested by some workers that the strains at times appear to be different from the known ones. Veterinarians in India have isolated from cattle strains of *Brucella* which do not fall in line with three well known strains.

Recently three cases have been reported (Soman, 1953) from J. J. Group of Hospitals, Bombay. In these cases diagnosis was primarily based on agglutination test. The importance of the study of the problem of pyrexia of unknown origin and the interpretation of serological test and the clinical co-ordination was brought out in this study. The strains isolated had given peculiarities of growth nonconcurring the standard description of *Brucella* cultures on solid agar media. It was then felt that the ingredients employed in the method of preparation of the media might have caused the difference. At the same time epidemiological study of brucellosis had been attempted. The goat incriminated in one of the cases was investigated and was proved to be excreting *Brucella* organisms in milk. The agglutination test with goat's milk was not conclusive. The sera of two members of the patient's family and seven members of laboratory workers were tested for *Brucella* agglutinins with negative results. Chick embryo was found useful in getting rapid profuse growth of pure smooth culture. The 'R' strain from goat's milk was obtained as 'S' strain after passage through chick embryo. Guinea-pigs were experimentally infected with development of granuloma in internal organs. It was this detection of three acute cases of brucellosis within eight months that led us to take up the work of determining the incidence of this disease in and around Bombay.

Material and Method

The test of choice is tube agglutination test. The suspension of *Brucella abortus* was obtained from the Haffkine Institute, Bombay, for this purpose. Standard method recommended for reading the test is adopted, *viz.*, the tubes are examined after the interval of 24 and 48 hours with the help of a hand lens. The data presented in this paper are in reference to those cases which have given the positive agglutination titre of 1 in 80 or above. This investigation has been started from August 1952.

The following groups are considered for investigation :

Group I—Sera from febrile cases (received for Widal test).

Group II—Sera received for serological test for syphilis (S.T.S.)

Group III—Sera from persons likely to be exposed to the infection.

The specimens of sera in groups I and II are collected at random as they are available after the respective tests asked for, sera of group III are personally collected.

The tests have been carried out in two series. The results are tabulated in Tables 1 and 2. Of 46 positively reacting cases of group I, some have been analysed in Tables 3, 4, 5 and 6.

Table 1 (First Series)—Agglutination Test Results of Group I (Widal Sera) and Group II (S.T.S. Sera)

		Total	Negative	1 in 20	1 in 40	1 in 80 or over	Percentage of positive in 1 in 80 or over
9-8-52 to 22-1-53	Group I	508	465	9	12	22	4·325
	Group II	1038	977	8	25	28	2·66

TABLE 2 (SECOND SERIES)—AGGLUTINATION TEST RESULTS ON GROUP I SERA (WIDAL SERA) AND GROUP III SERA (DAIRY WORKERS)

	Total	*Titres* Negative	1 in 20	1 in 40	1 in 80 or over	Percentage of positive in 1 in 80 or over
Group I	463	438	—	1	24	5·181
Group III	223	207	4	3	9	4·035

TABLE 3—SHOWING NUMBER OF CASES OF GROUP I FROM BOTH SERIES, WITH BRUCELLA AGGLUTININ TITRE OF 1 IN 80 OR OVER

	Titres						
Total No. of cases	1 in 80	1 in 160	1 in 320	1 in 640	1 in 1,280	1 in 2,560	1 in 5,120 to 1 in 20,480
46	10	16	5	4	3	4	4

TABLE 4—AGE AND SEX DISTRIBUTION IN 46 CASES OF GROUP I

Total	Male under 12 years	Male adult	Female under 12 years	Female adult
46	6	31	2	7

TABLE 5—DURATION OF ILLNESS

Total No. of cases		1 week or less	2 weeks	3 weeks	4 weeks	5 weeks to 3 months
32	Duration of illness prior to admission	15	8	4	nil	5
22	Duration of hospitalization	7	6	4	3	2

TABLE 6—STUDY OF TEMPERATURE CHARTS IN 30 CASES

Total No. of cases	Continuous	Remittent	Intermittent	Irregular
30	9	2	12	7

N.B.—12 of these cases had titres of 1 in 640 or over.

The following record was available in 17 cases:

Liver palpable ...	... 3 cases
Spleen palpable ...	... 4 cases
Liver and spleen palpable	... 3 cases
Lymph glands palpable	... 4 cases
Respiratory system affected	... 2 cases
C. N. system ...	... 1 case

Final diagnosis was obtained from 30 cases:

?Meningitis	1 case	—Brucella titre	1 in 160	
Brucellosis	7 cases—	„ „	1 in 160	1 case
			1 in 1,280	2 cases (one case Br. isolated).
			1 in 2,560	2 cases (one case Br. isolated).
		highest	1 in 10,240	1 case
			1 in 20,480	1 case
Enteric with Brucellosis	2 cases—	Brucella titre	1 in 160	1 case
			1 in 10,240	1 case
Enteric	7 cases—	„ „	1 in 80	3 cases (S. typhi isolated 1 case).
			1 in 160	3 cases (S. typhi isolated 2 cases).
			1 in 1,280	1 case
Respiratory infection	3 cases—	„ „	1 in 80	1 case
			1 in 160	1 case
			1 in 640	1 case
P.U.O.	7 cases—	„ „	1 in 80	4 cases
			1 in 160	2 cases
			1 in 640	1 case
Ulcer	1 case —	„ „	1 in 80	
?Smallpox	1 case —	„ „	1 in 160	
Amoebic-hepatitis	1 case —	„ „	1 in 2,560	

Total 30 cases.

DISCUSSION

Antigenic suspension of *Br. abortus* is used in the present survey for detection of agglutinin levels. *Br. melitensis* suspension locally obtained was not satisfactory, hence no comparison of titres obtained for each of these suspensions is made. Majority of this sera particularly from those in second series have been tested against (1) the standard *Brucella* suspension from the Standard Laboratories, Collindale, U. K. (2) *Brucella abortus* from Mukhteshwar, Kumaun, (3) *Brucella*

abortus from local Veterinary Institute. Results obtained by us are comparable with those obtained against first and second while the results with the use of third suspension have been negative. Thus the behaviour of antigenic suspension is noteworthy in studies of this nature.

Non-specific rise in agglutinins has to be borne in mind. Literature mentions the rising titre for *Brucella* group in cholera vaccinated military population (McCullough, Eisele and Beal, 1943, Eisele, McCullough, Beal and Burrows, 1946). This is attributed to similarity of chemical groups in 'H' antigen of *V. cholerae* and 'O' antigen of *Brucella*. No data has been so far worked out in this connection in India. These studies are in progress.

For the study of the incidence of the infection, a titre of 1 in 40 or over is considered to indicate the presence of infection, latent or active. The study presented here is with a view to detect active infection and to isolate *Brucella* strains, therefore the cases giving the titre of 1 in 80 or over are discussed. Tables 1 and 2 show that the percentage of positive reactors is more or less same in group I (febrile cases) being 4·135 and 5·181. While in the sera of group II (afebrile cases) percentage of positive reactors is 2·66. The difference appears to be suggestive of but not statistically significant. Further group of sera will have to be tested from a population which is likely to be exposed directly to infection, in occupations such as slaughter houses, tanneries, dairies, etc. Table 2 shows group III which consists of sera from dairy workers. The percentage of positive reactors as 4·035 compares with that obtained in group I febrile cases. This is not without significance.

Cultures were attempted in 11 cases. Two strains have been isolated from Case 3 and 45 giving agglutination titre of 1 in 1,280 and 1 in 2,560 respectively.

In 2 cases Widal test was negative but *S. typhi* were isolated from clot culture. The titre for *Brucella* in these two cases were 1 in 80 and 1 in 160.

Distribution according to age and sex (Table 4) has significance during such a survey. However, so far as the data presented is concerned it is from a limited population and hence need not be considered. In relation to the history of residence many have stated as Bombay and some have come from Kalyan, Andheri, Khar, Palghat, Khandesh, Sunderpura (Saurashtra) and Travancore.

It is well known that the population admitted to a general hospital like the J.J. Group of Hospitals is migrating to and from their native places and have often small farms and some animals such as cattle, sheep and goats. Some of these people also are in the habit of drinking raw milk, hence, —occupations or residence as stated by these patients while in Bombay city is not of importance. One has to probe into their habits of migration etc.

Data regarding duration of illness (Table 5) are an important feature in the study of brucellosis. This disease causes high morbidity with consequent economic loss to the community, *e.g.*, in Case 3, and the case of laboratory infection the patients were unable to work for at least 3 months.

Illustrative Cases

Case 1[3(7610)]—Male, 45 years, Muslim, broker. Residence Kalyan. Duration and symptoms prior to admission—low fever and cough of two months, profuse sweating and swelling of feet. Duration of hospitalisation—one month. Temperature—intermittent, highest being 101·5°F.

Specimen of blood received on second day of admission for Widal test and clot culture for *Salmonella* was negative for both. Serum agglutinated *Br. abortus* 1 in 1,280. Blood cultured on 3rd day of admission for *Brucella* yielded growth of the organism on 10th day of culture. The agglutinin titre of serum was same as on previous day. This specimen of serum about 20 days later gave *Brucella* agglutinin titre same as before.

Case 2[26(6337)]—Male, 23 years. Christian, farmer in Travancore. Arrived in Bombay from Travancore about two months prior to admission. Past history of fever two months back. Had fever for seven days before admission and was in the hospital for two months. Temperature—intermittent. Spleen palpable. On the fourth day of admission Widal test and clot culture (for *Salmonella*) were negative. Serum agglutinated *Br. abortus* in 1 in 160. Hence further quantity of blood was obtained for culture for *Brucella* on 13th and 14th day of admission (the patient had no fever on 13th day). The serum showed rising titre for *Br. abortus* up to 1 in 1,280. Cultures remained sterile for four weeks. Patient was treated with chloramphenicol, oxytetracyclin and emetine, and blood was repeated for agglutination test three weeks after the 3rd test. The patient was apyrexial during the interval. Agglutinins were absent in any of the dilutions in this test. This is difficult to explain. All second, third and fourth samples were personally collected and tested. Effect of antibiotics on agglutinin titre has to be studied.

Case 3[31(6590)]—Male, 19 years, Hindu, hawker, residence—Masjid Bunder. Duration and symptoms prior to admission: Fever four to five days with headache. Hospitalisation—21 days. Temperature—remittent, highest 102°F. Spleen—palpable.

Specimen for Widal test on 5th day of admission was negative. *S. typhi* was isolated from clot culture. The serum agglutinated *Br. abortus* in 1 in 160. The test was not repeated hence we have no knowledge regarding the appearance of agglutinins against *Salmonella* or rise in titre against *Brucella*. Repetition in such cases would help in deciding whether agglutinins

against *Brucella* are due to non-specific rise or due to *Brucella* infection.

Case 4[33(6838)]—Male, 30 years, Hindu—shopkeeper, occupation recorded was as panwalla, on personal inquiry he stated it as also of a milkman, residence Mazagaon, Bombay.

Duration and symptoms prior to admission : Fever 13 days with headache and rigor. Hospitalisation—33 days. Temperature—continuous. Liver and spleen palpable and tender. Widal test and clot culture for *Salmonella* were negative on 6th day of admission. The serum did not agglutinate *Br. abortus* in any of the dilutions up to 1 in 160.

On 10th day of admission second sample was received for Widal test and clot culture for *Salmonella* with negative results. Agglutination test for *Br. abortus* gave the following results :

1 in 20	1 in 40	1 in 80	1 in 160	1 in 320	1 in 640	1 in 1280
−	−	+	+	+	+	+

1 in 2,560	1 in 5,120	1 in 10,240	1 in 20,480	1 in 40,960
+	+	+	+	−

On the comparison with the results of the first specimen this appeared inconsistent hence the test with the first specimen, that was kept in refrigerator, was repeated which gave the following results :

1 in 20	1 in 40	1 in 80	1 in 160	1 in 320	1 in 640	1 in 1280
−	−	−	−	+	+	+

1 in 2,560	1 in 5,120	1 in 10,240	1 in 20,480	1 in 40,960
+	+	+	+	−

Unless there is agglutination in the titre 1 in 160, no further dilutions are put up. The first sample was negative up to 1 in 160, but gave final positive titre same as the second sample. Strangely enough instead of showing rising titre the second specimen showed positive agglutination in 1 in 80 and 1 in 160 which was absent in the first specimen. But for the results of the second specimen this case would have been missed.

The prozone phenomenon may be considered here to explain the behaviour of the antigen and the antibody in the two specimens.

Case 5[45(749)]—Female, 30 years, Muslim, occupation—domestic servant, residence—Sopala (about 35 miles from Bombay). Duration and symptoms prior to admission : Fever for one month. Temperature—intermittent. Spleen—palpable. Clot culture and Widal test for *Salmonella* were negative on 16-3-53.

Serum agglutinated *Br. abortus* in 1 in 2,560. Blood culture for *Brucella* on 18-3-53 was positive. Agglutination test was repeated twice on 18-3-53 and 25-3-53 with the same positive titre as before.

Case 6[46(4076)]—Male, 22 years, Hindu, occupation—postman, was a school teacher for two years at his native place Pundaghat (Ratnagiri district). Duration and symptoms prior to admission :Continuous fever for 8 days with headache. In the past history he had direct contact with cattle. Before coming to Bombay was in the habit of consuming raw milk daily for one month. No detailed information is available of clinical findings. On 3rd day of admission Widal test and clot culture for *Salmonella* were negative. Serum agglutinated *Br. abortus* in 1 in 1,280. On 7th day blood culture was done. The agglutination titre for *Brucella* rose to 1 in 10,240. Patient was discharged when afebrile. On 29-5-53 after readmission *Brucella* agglutination test was positive in 1 in 2,560. Blood was cultured on 43rd day from previous admission. Agglutination test for *Brucella* was positive in titre of 1 in 10,240, i.e., same as on previous admission. Both specimens of blood culture for *Brucella* remained sterile.

A Case of Laboratory Infection—Female, 22 years, Hindu, occupation—laboratory worker. The workers in the laboratory were tested for the presence of Brucella agglutinins. None of them showed the presence of agglutinins on this testing. One of the workers soon after the handling of the cultures, preparations of the suspensions etc., began to get low intermittent fever. Agglutination test was put up for *Salmonella* with negative results. *Br. abortus* agglutinins were demonstrated on the 8th day of fever in the dilution of 1 in 640. Case was ambulatory during this period, and later was admitted to the hospital for treatment. On 12th day of the illness blood culture was taken and agglutinin titre was found to be 1 in 1,280 for *Br. abortus*. Widal test was negative. Blood culture was contaminated.

A third specimen taken later gave the titre of 1 in 1,280. Duration of hospitalisation was 28 days and convalescence was of two months. Person resumed duties after about 3½ months. The last test showed a titre of 1 in 320, i.e., three months since the last test which had given the titre of 1 in 1,280. Brucellosis is notorious for laboratory infection. Other workers handling the material did not get the infection. It was noted that this particular case cut her finger while working.

Cultural Studies

Cultures were put up in liver extract broth with agar as in Castaneda technique.

Three strains isolated prior to this and already reported (Soman, 1953), and two isolated during this survey and strain PA from K.E.M. Hospital, have been restudied. All the strains have been tested against the standard monospecific sera of standard laboratories, Collindale, U.K. and all the strains gave positive agglutination with monospecific *Br. melitensis* serum but no agglutination with monospecific *Br. abortus* serum. The standard dyes were obtained and the dye test also gave reactions of *Br. melitensis* for all the strains.

Summary

Preliminary data in connection with studies on incidence of human brucellosis in and around Bombay is presented. Sera are grouped as follows :

Group I—971 sera received for Widal test in two series gave positive percentage —4·325 and 5·181 respectively.

Group II—1038 sera received for serological test for syphilis gave positive percentage of 2·66.

Group III—223 sera collected from dairy workers gave the positive percentage of 4·035.

The titre of agglutinin for positive reactors in these groups is taken as 1 in 80 or over. 46 sera of group I have positive agglutination titre in 1 in 80 or over. Attempt has been made to analyse the history wherever available.

Illustrative cases are mentioned. Following special features are noted. Isolation of *Brucella* with rising titre followed by sudden drop after treatment, isolation of *S. typhi* with presence of *Brucella* agglutinins and negative Widal test ; prozone phenomenon ; isolation of *Brucella* from the patient giving the history of consuming raw milk ; rise of titre during first admission and fall followed by rise of titre during re-admission ; and a case of laboratory infection.

Strains are isolated from cases and studied along with the previously isolated strains. All were agglutinated by monospecific serum of *Br. melitensis* but not that of *Br. abortus*.

There is sufficient indication of the presence of brucellosis in latent and active forms, in the work† presented here.

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REFERENCES

EISELE, C. W., MCCULLOUGH, N. B., BEAL, G. A. AND BURROWS, W.—*Proc. Soc. Exper. Biol. & Med.*, **63** : 89, 1946.

Industrial Hygiene & Occupational Diseases—A Publication of the Centre for Safety Education, New York University, p. 124, 1941.

Joint FAO/WHO Expert Panel on Brucellosis, Report of the First Session, 1951.

Joint FAO/WHO Expert Panel on Brucellosis, Report of the Second Session, 1952, WHO/Bruc./93, November 1952.

MCCULLOUGH, N. B., EISELE, C. W. AND BEAL, G. A.—*J. Infect. Dis.*, **83** : 55, 1943.

SOMAN, S. D.—*Indian J. Med. Sc.*, **7** : 291, 1953.

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NEUROSYPHILIS—THE COMMON TYPES IN HYDERABAD

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The object of this paper was to analyse cases of neurosyphilis admitted into one medical unit of Osmania General Hospital for a period of 3½ years. Paraplegias of non-syphilitic origin were also analysed and their aetiology discussed.

The cases of neurosyphilis (total number of cases being 31) are considered under the following heads :

A. SPINAL SYPHILIS.

I. Paraplegia—	
(1) Erb's syphilitic spinal paralysis	7
(2) Meningomyelitis with motor and sensory symptoms ...	4
(3) Gumma	1
II. Sensory involvement only ...	3

B. CEREBRAL SYPHILIS :

I. Headache	2
II. Primary optic atrophy and headache	1
III. Headache and paresis of the soft palate right side and left pupillary changes	1
IV. Facial paralysis of lower motor neurone type	1
V. Leftsided cerebellar ataxy ...	1
VI. Hemiplegia	6
VII. Hemianaesthesia left side ...	1
VIII. Hemiplegia and ataxy	1
IX. Gumma cerebellopontine angle, left side	1
X. Gumma of frontal bones	1†

From the above list, it could be seen that 16 out of 31 cases were of spinal type ; and of this again 12 cases were of paraplegic type.

Sex distribution—4 out of 31 cases were females; 2 of paraplegia and 2 of hemiplegia. Neurosyphilis was predominently male in distribution.

Age distribution—

Spinal Syphilis :

Age :	15-20	21-30	31-40	41-50	51-60
No. cases :	2	7	3	2	1

Cerebral Syphilis :

Age :	15-20	21-30	31-40	41-50	51-60
No. cases :	2	3	6	2	3

† Not strictly a case of neurosyphilis. It was included because the case was mistaken for headache due to neurosyphilis for a considerable time until a skiagram of the frontal bones was taken. Perhaps both were present.

The most common age period for spinal syphilis was 21-30 and for cerebral syphilis 31-40.

Previous history of syphilis—Previous history of sore treated usually with indigenous medicines was obtained in about 36 per cent of the cases. The time interval between the appearance of sore and onset of disease varied from two to twentyfive years, the average being 8·5 years. The details were

2 years—1	10 years—1
3 years—2	12 years—2
5 years—2	20 years—1
6 years—1	25 years—1

Serological Reactions (Wassermann Reaction)—
Spinal Syphilis:
(1) C.S.F. negative blood positive—7
(2) C.S.F. positive blood positive—8
(3) C.S.F. positive blood negative—Nil.
Cerebral Syphilis:
(1) C.S.F. negative blood positive—7
(2) C.S.F. positive blood positive—6
(3) C.S.F. positive blood negative—2

Spinal Syphilis

Erb's syphilitic spinal paralysis was the most common type. Usually the onset was insidious; and by the time the patient reached the hospital, well marked signs of paraplegia were present with bladder disturbances.

There were four cases of meningomyelitic type with motor as well as sensory involvement. Usually the onset was insidious; and in one case it was acute.

Three cases showed purely sensory involvement of spinal segmental distribution with absolutely no motor signs.

One was of gumma, which cleared completely with antisyphilitic treatment.

Results with Treatment: The sooner the antisyphilitic treatment was started after the onset of disease, the better was the result. The case with gumma had cleared completely. Two cases of paraplegia had improved so considerably that they could walk home. The one case of acute myelitis, who came to the hospital within a couple of days after the onset of disease could also walk home greatly improved. Extensor plantars had never become flexor after treatment. Generally cases that had sought treatment within a few days after onset had invariably improved. Others did not.

Some illustrative case reports are given below:

Case 1 (Erb's spastic paraplegia)—M.Y., aged 30 years, was admitted on 1-5-1953 with inability to walk, of ten days' duration. History of penile sore treated with indigenous medicines 12 years back. On examination typical paraplegia of both legs were present; exaggerated knee and ankle jerks, extensor plantars both sides and loss of abdominals. Sensations were normal. C.S. fluid was clear. Proteins 85 mg. per cent; globulin test negative; cells, 2 lymphocytes per c.mm. WR positive; blood WR positive. He was given 50,000 units of penicillin every 3rd hour for a period of 30 days, *i.e.*, 120 lakhs. He received iodides by mouth. One injection of bismuth 0·2 g. every 8th day—ten injections were given. At the end of treatment the patient was able to walk with the aid of a stick.

Case 2 (Paraplegia with sensory involvement—meningomyelitis)—P., male, aged 35 years, was admitted on 6-6-1953 with inability to walk, of 10 days' duration; onset was insidious. History of penile sore treated with indigenous medicines 6 years back. On examination the patient had apastic paraplegia of both legs; extensor plantar responses both legs; exaggerated ankle and knee jerks and loss of abdominals. Bladder was full—and the patient was able to evacuate in small quantities frequently. Cotton wool, pin prick, vibratory sense diminished considerably below T8 segmental level. C.S. fluid was clear. Proteins 45 mg. per cent; globuin test negative; cells, 13 lymphocytes per c.mm., WR strongly positive. Blood WR was strongly positive. He was treated with penicillin 50,000 units every 3rd hour for a period of 30 days, *i.e.*, 120 lakhs of units and iodides by mouth. After the penicillin course was over, he received 10 injections of bismuth 0·2 g. and Mapharside 0·04 g. every week. At the end of the treatment C.S.F. WR and blood WR were still positive. But clinically the patient recovered bladder function and was able to walk freely and well.

Case 3 (Gumma T9 segment)—K.M., male, 25 years, was admitted on 24-4-1953 with inability to walk, of 2 months' duration. The onset was insidious with root pains at T9 segment on the left side mostly. He could not pass urine for the last 2 days. Previous history of penile sore treated with indigenous medicines 2 years back. On examination there was paraplegia of both legs—extensor of the left plantar and doubtful on right side with exaggerated knee and ankle jerks and loss of superficial reflexes. Pin prick and cotton wool sensations were diminished below T9 segment; more intensely lost on the left side compared to the right side. C.S. fluid was yellowish and of very low tension. Protein 1200 mg. per cent. Globulin test positive, WR strongly positive; blood WR positive. He was put on iodides by mouth and penicillin 50,000 units every 3rd hour for 30 days (total 120 lakhs). After the course of penicillin was over, he received 10 injections each of bismuth 0·2 g. and Mapharside 0·04 g. at weekly intervals. By 6-5-1953, he regained control over the bladder, was able to move both his legs, regained sensations of cotton wool and pin prick. He was able to walk with the aid of a stick by 11-5-1953. Plantars had become flexor on 14-5-1953. On 4-8-1953, after he finished antisyphilitic treatment, C.S. fluid was clear; proteins 50 mg. per cent; globulin test positive; cells, 2 lymphocytes per c.mm.; WR strongly positive. Blood WR strongly positive. Clinically he was able to walk freely and was discharged.

Case 4 (Sensory involvement only)—M, aged 30 years, was admitted on 11-7-1952 with the complaint of inability to walk properly of 2 months' duration. No previous

history of sore. On examination hyperaesthesia to pin prick was present over dorsum of both feet. Cotton wool sensation was lost up to the level of umbilicus on the left side only. Joint sense was lost on left leg only. Plantars were flexor and deep reflexes were present. Rombergism was present but finger nose test and ankle knee test were normal. C.S. fluid was clear; proteins 15 mg. per cent; cells, 4 lymphocytes per c.mm.; WR positive; blood WR strongly positive. Improved considerably with antisyphilitic treatment.

Cerebral Syphilis

Hemiplegias formed by far the most common type of manifestation of cerebral syphilis. Six cases were purely of motor type ; one was purely sensory hemianaesthesia and one was of hemiplegia and ataxy. Two cases came with pure headache, relieved by antisyphilitic treatment. One was a case of gumma cerebellopontine angle left side, clearing completely with antisyphilitic treatment.

Some illustrative case reports are given below :

Case 1 (Hemiplegia)—R, female, 25 years, was admitted on 19-12-1952 with inability to use the right hand and the right leg, of 4 days' duration. Onset was sudden. On clinical examination, hemiplegia of the right side was present with facial nerve paralysis of upper neurone type on the right side. C.S. fluid—proteins 45 mg. per cent, WR weakly positive; blood WR positive. Improved with penicillin therapy and iodides by mouth.

Case 2 (Hemianaesthesia)—G.D., male, 60 years, was admitted on 20-3-1953 with inability to feel on the whole of left side—sudden onset of 15 days' duration. History of gonorrhoea and sore 5 years back. On examination, there was complete hemianaesthesia to all sensations on the left side including face. Sense of motor weakness on the left side was complained of subjectively. C.S. fluid—proteins 110 mg. per cent, globulin test positive; cells, 4 lymphocytes per c.mm.; WR positive. Blood WR strongly positive. He had improved considerably with antisyphilitic treatment.

Case 3 (Headache)—S.R., male, 32 years, was admitted on 15-8-1952 with severe headache over the vortex of the head, of 6 months' duration. Clinically no other signs were present. C.S. fluid—proteins 150 mg. per cent, WR strongly positive. X-ray of the skull—no abnormality detected. Relieved completely by antisyphilitic treatment.

Case 4 (Optic atrophy)—R, female, 38 years, was admitted on 13-10-1950 with intense headache of 6 months' duration and failing vision. Fundus examination revealed primary optic atrophy both sides. C.S.F.—WR negative; Blood WR strongly positive. Antisyphilitic treatment relieved headache completely and improved vision to some extent.

Case 5 (Facial paralysis)—T.K. Singh, male, 50 years, was admitted on 13-7-1951 with facial paralysis of lower motor neurone type right side, of 8 days' duration. WR very strongly positive. Recovered completely with antisyphilitic treatment.

Case 6 (Cerebellar ataxy)—M.V.G., male, 40 years, was admitted on 25-7-1952 with inability to walk properly, of 9 days' duration. Previously he had treatment for syphilis 3 years back; and also one year back. There was nystagmus towards left side. Rombergism was present; and the patient was swaying towards the left. Finger nose test on the left side was grossly ataxic. C.S. fluid—proteins 45 mg. per cent, WR of C.S.F. strongly positive. Blood WR strongly positive. He had improved to a great extent on antisyphilitic treatment. He was able to walk by himself, though slight ataxia was still evident when he attempted to walk rapidly.

Case 7 (Gumma Cerebellopontine angle)—C, male, 20 years, was admitted with history of headache and inability to walk properly, of one month's duration. He gave history of penile sore 2 years back treated with 2 injections of N.A.B. The present complaint started insidiously with headache. On examination the patient's gait was unsteady with a tendency to fall on left side when he closed his eyes. There was nystagmus on looking towards the left. Finger nose test on left side was ataxic. Hypotonia was markedly present on left side, so also disdiadokinesis. Cranial nerves V, VII and VIII were involved on the left side. C.S. fluid clear, proteins 120 mg. per cent, globulin test positive, WR strongly positive. Blood WR strongly positive. He was put on full antisyphilitic treatment. At the end of two months, his headache was relieved completely, he could walk without ataxia, his hearing had improved; V and VII nerves had almost completely recovered.

Parenchymatous Syphilis

Tabes and general paralysis were distinguished by a special name of parenchymatous syphilis. No case of this type was met with in this series. Authenticated cases of G.P.I. and tabes were described in this part of the country, but they were looked upon as clinical rarities. When other forms of syphilis were fairly common, why parenchymatous syphilis alone was rare, was difficult to explain. Various combination of factors like strain of spirochaete, widespread prevalence of malaria ; constitutional make up of our population might all be responsible.

The Scheme of Treatment for Neurosyphilis

In evaluating any scheme of treatment, the one factor to be constantly remembered was that the patient would never come back for follow up treatment ; and it would be better to give the maximum treatment when he was in the hospital. A combination of penicillin, iodides, bismuth, and arsenic seemed to be the best scheme under the circumstances. The patient was put on iodides by mouth in increasing doses and a total of 120 lacs of penicillin was given in 30 days—50,000 units every 3rd hour. 15 days after penicillin was started bismuth 0·2 g. I.M. (10 injections) was given once weekly. After the course of penicillin was over, oxophenarsine hydrochloride (mapharside) 0·04 g. 10 injections were given at weekly intervals. No untoward

reactions were met with, with this scheme of treatment.

Paraplegias of Non-syphilitic Origin

During the same period of 3½ years, there were 10 cases of paraplegia of non-syphilitic origin. The aetiology of paraplegia for two cases was known ; one was due to neurofibroma (he had neurofibromatosis all over the body with kyphosis of the spine) and the other was due to skeletal fluorosis. Out of the remaining 8, 7 were males and one was a female. The age incidence of these 8 cases was

Age :	5-10	11-20	21-30	31-40	41-50
No. :	1	3	1	2	1

The majority of the cases were in the young middle age, the youngest being 9 years old. Only one case showed sensory involvement *i.e.* diminision to pin prick and cotton wool sensations below T8. The rest were purely cases of motor paraplegia. 2 cases gave history of previous penile sore. C.S.F. and blood WR reactions were negative repeatedly. Usually the onset was insidious. Two cases started with fever and the onset was acute.

Case 1 (Paraplegia with acute onset—nonsyphilitic aetiology)—R, female, 9 years, was admitted on 21-11-1952 with loss of power of both feet of 15 days' duration. The disease started with high fever which lasted for a week; and during the course of fever, there was sudden loss of power of both legs and inability to pass urine. On clinical examination the patient showed all signs of pure motor paraplegia with a full bladder. X-ray of vertebrae : No abnormality detected. C.S. fluid—clear; proteins 90 mg. per cent; globulin test negative; sugar present; cells, 2 lymphocytes per c.mm. WR negative. Blood WR also negative. Treatment had not improved the girl.

Case 2 (Paraplegia with insidious onset—non-syphilitic aetiology)—Y., male, 45 years, was admitted on 25-5-1951 with inability to walk, of 6 months' duration. No history of venereal disease. Onset was insidious. On examination, the patient had pure motor paraplegia of both legs. C.S. fluid—clear; proteins 90 mg. per cent; W.R. negative. Blood WR negative. Antisyphilitic treatment did not improve his condition.

Only one thing was certain in these cases ; and that was, syphilis was not the cause. Then what was the cause of these paraplegias? The cases that gave history of acute onset with fever suggested an infection perhaps due to a virus with selective action on motor tracts of the cord. It would be very difficult to apply the same proposition to cases of insidious onset. Most of the cases of this type came from lowest economic level, *i.e.* beggars, tailors and unemployed. These were all patients suffering from chronic malnutrition. Had malnutrition anything to do, with the production of paraplegia? Or were there any other factors? We could only speculate now ; for we have no data at present. All these patients were young people, crippled for life. An elucidation of aetiology of these cases of paraplegia is urgently called for, wherever laboratory and other facilities exist.

Summary

1. Of 31 cases of neurosyphilis admitted in a period of 3½ years, 15 were of spinal type and 16 were of cerebral type. Typical cases are described.

2. No case of parenchymatous syphilis was found in this series.

3. 8 cases of paraplegia of nonsyphilitic and unknown aetiology are discussed.

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References

Brain, W. Russel.—Diseases of Nervous System. Second Edition 1945. Oxford Medical Publication, p. 386.

King, A. J.—*Practitioner*, **171** : 430, 1953.

Kutumbiah, P.—*The Vizagapatam M. College Magazine*, **9** : 24, 1935.

DISCREPANCIES IN THE TETANUS ANTITOXIN TITRATION

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Discrepancies are observed in the titration of tetanus antitoxins in different laboratories. In elucidating the causes the Permanent Commission on Biological Standardisation, on the basis of several investigations which were published periodically in the Bulletin of the Health Organisation (League of Nations), came to the conclusion that the causes are intrinsic to the reagents, and the factor which exerts the greatest influence on the precision of the assay is the toxin used, and the variation is due to qualitative differences in tetanus toxin and antitoxin. But still, at present, our knowledge is limited about the precise nature of difference in the samples of toxins responsible for the different values assigned to antitoxins when titrated by different toxins.

However the fact is that discrepancies are observed. The following experiment, the results of which are shown in the Table 1 indicates that not only various toxins give variable units when assay-

TABLE I.—SHOWING THE RESULTS OF TITRATION OF FOUR CONCENTRATED ANTITOXINS WITH DIFFERENT LIQUID TETANUS TOXINS HAVING DIFFERENT L+DOSE. A POWDERER TOXIN IS ALSO INCLUDED IN THESE TITRATIONS

Antitoxin Lot No.		A (7½ years old) L+dose 0·04 c.c.		B (8 months old) L+dose 0·0625 c.c.		D (2 months old) L+dose 0·025 c.c.		F (3 months old) L+dose 0·12 c.c.		C Powdered Toxin L+dose 0·004 g.	
		Date of testing	Units	Date of testing	Units	Date of testing	Units	Date of testing	Units	Date of testing	Units
I	371	24-12-52	8,000	3-1-53	>4,000 <5,000	—	—	—	—	—	—
II	385	4-12-52	10,000	—	—	—	—	—	—	10-1-53	4,000
III	394	—	—	—	—	4-3-53	>2,400	13-3-53	<3,000	10-3-53	4,500
	,,	—	—	—	—	10-3-53	<4,500	16-3-53	>2,500	16-3-53	4,000
IV	395	—	—	—	—	4-3-53	3,000	13-3-53	<4,000	10-3-53	5,500
	,,	—	—	—	—	—	—	16-3-53	>3,000	16-3-53	5,000

TABLE 2.—SHOWING VARIATIONS IN THE TITRES OF FIVE SERA TESTED UNDER THE AUSPICES OF THE INTERNATIONAL INQUIRY WITH LIQUID AND PRECIPITATED POWDERED TOXIN

(From Bull. Health Org. Biological Standardization II, Vol. X, No. 2, 1942-43)

Serum Sample	Animal used	Toxin Lots Liquid T509	glycerinated T550B	glycerinated T550A	toxin T540	Powdered toxin	Remarks
		A	B	C	D		
I	*Mouse	1,140	1,000	1,200	1,100	1,230	
	*G. P.	1,430	1,410	1,600	1,650	1,224	
II	Mouse	1,330	1,400	1,550	1,550	1,570	Powdered toxin gives more or less uniform results.
	G. P.	1,930	2,500	3,200	3,600	1,771	
III	Mouse	4,290	4,700	5,800	5,300	5,040	
	G. P.	6,470	8,500	12,000	12,000	6,214	
IV	Mouse	900	850	850	850	984	
	G. P.	1,040	850	950	1,000	917	
V	Mouse	8,780	8,800	10,000	9,500	10,660	
	G. P.	13,260	16,000	22,000	20,000	12,119	

* 10 mice and 8 guinea-pigs were used for each assay. The titres shown against mouse were those obtained in mice, while those shown against G.P. were those obtained in guinea-pigs.

ing the same antitoxin, but also age of the toxin as well as its L+ value exert a great influence on the precision of assay.

The following toxins were used in the experiments:

A. Lot 447 B, filtered on 16-1-45, L+dose 0·04 c.c.

B. Lot 725, filtered on 15-5-52, L+dose 0·0625 c.c.

C. Powdered foreign toxin, L+dose 0·004 g.

D. Lot. 744, filtered on 8-1-53, L+dose 0·025 c.c.

E. Lot 14, foreign liquid toxin, L+dose 0·12 c.c.

Four concentrated antitoxins lots 371, 385, 394, 395 were tested. The standard antitoxins, used for determination of L+ dose meant for assaying the above antitoxins, were received from Medical Research Council (London) and National Institute of Health (Washington).

Guinea-pigs of local supply were used throughout the experiments. Three guinea-pigs were used for each dilution, the weight of guinea-pigs varying from 330 to 370 g.

Antitoxins 371 and 385 titrated with toxin "A", the L+ dose of which was constant for a very long time, showed respectively 8,000 and 10,000 units per ml. However, when the former was retitrated with fresh toxin "B" and the latter with powdered toxin "C", both of them showed nearly 4,000 units per ml.

Similarly, antitoxin 394 when titrated with fresh toxins "D" and "F" showed approximately 2,400 and 2,500 units respectively. Antitoxin 395, titrated with fresh toxin "F" showed nearly 3,000 units. These results compared with 5,500 units shown by antitoxin 395 when powdered

toxin "C" was used, and 4,500 units shown by 394 when titrated with the same powdered toxin indicate the discrepancies very well. These experiments clearly showed that very old toxins gave higher units and very fresh toxins with poor combining power showed lower units.

The experiments in Table I also showed that there was some uniformity in the results when powdered toxin was used. The uniformity in the results should, of course, be expected in different laboratories if the same liquid or powdered toxin was used. However, the powdered toxin, being more stable, would naturally show more uniform results.

Unfortunately, however, the problem of assaying tetanus antitoxin is not solved by standardising the toxin. Experiments, the results of which are presented in Table 2, show another source of variation inherent in the use of different species of animals. For assaying tetanus antitoxins two species of animals, mouse and guinea-pigs are used. Table 2 shows the nature of variation in the results observed when both guinea-pigs and mice were used for titration of the same antitoxin. Five sera were tested by the International Enquiry (Bull. Health Org. Biol. Standardization II., Vol. X, No. 2, 1942-43) and the potency ratios derived from assay in the mouse and guinea-pig varied considerably. The difference between the mouse and guinea-pig units shown by the serum sample No. 5 was the widest. About a cent per cent variation was observed. Hence, in the case of liquid toxin the question of type of animal to be used should also be taken into consideration. The only redeeming feature in the experiment was that the variation in the potency was not so marked when powdered toxin was used for test. These yariations observed in the reaction between tetanus toxin and antitoxin in the mouse and guinea-pig, where liquid glycerinated toxin and sulphate precipitated powdered test toxins were used for assay, should move the authorities in the charge of standardisation to take steps to obviate the discrepancies.

Federal Government of the U.S.A. supplies not only standard antitoxin but also standardised powdered toxin to any laboratory, simply for the asking, through their Biologics Control Laboratory (National Institute of Health). The same procedure should be followed in India where in future there will be many Provincial laboratories inclined to use their own method, toxin, and animals, and thus reporting variable results. In our opinion there should be some organisation on the Union Government level to tackle such an intriguing problem.

REFRESHER COURSE

PREVENTION OF DIPHTHERIA

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Evolution of methods of prevention of an infectious disease is based on the knowledge of the mechanism of disease production. Before detailing the available methods of prevention of diphtheria, it would, therefore, be worthwhile to begin with a short outline of its pathogenesis.

Diphtheria is caused by the micro-organism *Corynebacterium diphtheriae*. Under conditions advantageous to the parasite, it infects man. The earliest evidence of such an infection is generally found in the nasopharynx. At this site, the typical lesion, commonly known as 'pseudo-membrane', is formed. This 'pseudo-membrane' consists of profuse growth of the organism combined with necrosed superficial tissues.

The organism remains localised at the site. At the worst, the 'pseudo-membrane' may extend above and below the original site, and may even block the larynx. But the organism does not invade blood stream, not even the deep tissues. The disease is produced by and large by the toxin produced by the organism, which prefers to remain localised. Infection is, therefore, only a prelude to toxin production, and it is the intoxication which produces the disease.

Thus, two ways of prevention of diphtheria suggest themselves: (1) avoidance of infection and (2) neutralisation of toxin formed by the organism. The second method involves immunisation, either actively with diphtheria toxoid, or passively with diphtheria antitoxin.

I. Avoidance of Infection

It is generally believed that diphtheritic infections are transmitted through droplets. The two parties to such transmission are the source and the susceptible. The sources of infection are generally the diseased and the carriers. The susceptibles are generally the children going to school or staying in institutions, and all who live in overcrowded and unhygienic tenements. Prevention of infection would involve causing a complete breach between the source and the susceptible. However, the very nature of the source and the susceptible indicates that it is a very difficult task to prevent contact of one with the other.

The first essential step to barricading the source is to detect unmistakably all the diseased and the carriers before they have transmitted their infection to the susceptibles. Provided all the diseased submit themselves to medical examination, diagnosis of a large percentage of them should be possible by clinical and bacteriological methods. Detection of carriers is far more difficult. Only the bacteriological methods are available for this detection, and these are not very simple either. Isolation of *C. diphtheriae* from the throat of these suspected carriers, and demonstration of virulence of the isolated organisms, are necessary to prove the carrier state.

Even if all the diseased and the carriers were detected, their isolation from the susceptibles would present a colossal problem in any country. In large cities overcrowding is inevitable—overcrowding in tenements, in places of entertainment, in public conveyances, etc. Contact between carriers and susceptibles could hardly be prevented where such overcrowding prevails. Avoidance of infection is, therefore, an ideal which is very difficult to achieve.

The ease of prevention of diphtheria by immunisation of the susceptibles, contrast so sharply against this difficulty of avoidance of infection that the former method is preferred by all without hesitation.

II. Immunisation of Susceptibles

There are four different but closely allied ways in which the susceptibles are immunised against diphtheria. They may be immunised actively or passively in nature, or actively or passively by artificial methods. Hence the four ways of immunisation are: (1) active natural, (2) passive natural, (3) active artificial, and (4) passive artificial.

(*a*) Active Natural Immunity: The antibody producing mechanism of man responds to the stimuli of diphtheritic antigen, whether administered naturally or artificially. The natural stimuli are obtained through repeated infections with *C. diphtheriae* in nature. If the size of the infection is small and the organisms are not virulent, no disease is produced. The repeated stimuli of even such small infections, however, produce enough diphtheria antitoxin to protect an individual against disease. Active antidiphtheritic immunity can, therefore, result from repeated subclinical infections.

The risk of depending entirely on nature is, however, very great. The size of the infection may be large or the organism virulent. Disease, and even death, may follow such an unpredictably large and virulent infection. Fatal termination, instead of immunity, may, therefore, be brought about by nature. Hence, it is not wise to depend on nature for immunisation, though nature, of course, protects the fortunates among a population who neglect themselves.

(*b*) Passive Natural Immunity: The other way in which nature immunises a newborn is not fraught with any danger. If the mother has developed for herself a quantity of diphtheria antitoxin, the child gets a share of it *in utero*. The antitoxin filters through placental membrane. Moreover, a considerable quantity of antitoxin is passed through colostrum. A breast-fed newborn always gets the advantage of this colostral antitoxin. The passive immunity, however, is short-lived. Though the passive immunity acquired from the mother lasts much longer than that acquired artificially through injection of horse-derived diphtheria antitoxin, still the duration seldom exceeds six months, if acquired at all. Hence, even a child born of immune mother would require artificial active immunisation six months after birth, or earlier.

(*c*) Active Artificial Immunity: The discovery of diphtheria toxoid has made active artificial immunisation against diphtheria an easy task. Of course, diphtheria toxin is the antigen, against which neutralising antibody requires to be developed for protection against diphtheria. But the toxin is too dangerous an antigen for the purpose of immunisation. It may cause the actual disease if administered in a dose required to immunise. Hence, before the discovery of diphtheria toxoid, the toxin used to be neutralised with just enough diphtheria antitoxin in order to make it safe. In spite of this precaution, however, several mishaps occurred in the past due to dissociation of the toxin away from the neutralising antitoxin. The dissociated toxin caused death of several of the inoculated.

The Toxoid—Toxoid is, however, entirely a safe product. By treatment of toxin with a small quantity of formalin and subsequent low heating, the toxin is converted to toxoid. This toxoid is no longer toxic, but retains the antigenicity of toxin. It has, therefore, the full advantage as a safe antigen for immunisation.

The crude toxoid, however, frequently gives rise to undesirable reactions. It is the impurities of the crude preparation which are chiefly responsible for it. It is, therefore, preferable to purify the toxoid. The toxoid-antitoxin-floccule (T.A.F.) is such a preparation, in which the toxoid is purified by specific flocculation with the antitoxin. The floccule does not, therefore, cause any reaction attributable to the impurities. However, there is a small quantity of horse serum protein,

which is the diphtheria antitoxin, in the floccule. Horse protein may cause serum reactions in the sensitive individuals, and further sensitisation to subsequent injection of horse serum products.

The modern preparations, therefore, contain the toxoid which is purified by chemical methods. To this purified toxoid, however, is added a small quantity of a mineral—a salt of aluminium, commonly aluminium phosphate or aluminium hydroxide. This mineral carrier, which also precipitates the toxoid, augments considerably the antigenicity of the toxoid. Two such preparations—(1) purified toxoid with aluminium phosphate (P.T.A.P.) and (2) purified toxoid with aluminium hydroxide (P.T.A.H.)—are now generally recommended for immunisation. They are improvements on the original alum precipitated toxoid (A.P.T.).

The Dosage—The dosage of these preparations is determined in terms of a measure called Lf value of the toxoid. The Lf expresses the combining power of a toxoid. When toxoid combines with antitoxin, floccules appear in the mixture. The quantity of toxoid which flocculates earliest with one International unit of diphtheria antitoxin is one Lf of toxoid. The modern preparations contain 50 Lf of the toxoid per c.c. The dose of such a preparation is generally recommended to be (1) for a child, 0·5 c.c. (25 Lf) and (2) for an adult 0·1 c.c. (5 Lf).

The relation of the child's to the adult's dosage, thus breaks the usual convention. The adult gets one-fifth the child's. Why so?

Active immunisation, not only produces a quantity of antitoxin for immediate protection, but also sensitises the immunised to a subsequent stimulus of the antigen. This sensitivity, on the one hand, helps development of a very large quantity of antitoxin with a small stimulus, while, on the other hand, produces allergic reactions of varying severity. The immunised, therefore, may react badly to diphtheria toxoid. The adults are generally immunised, either artificially or naturally. They may, therefore, react, more severely to a large dose, such as 25 Lf, than to a much smaller dose, such as 5 Lf. The sensitisation, which is associated with immunity of these adults, however, produces an antitoxin-producing response which even exceeds that produced in unimmunised, unsensitised children with a much larger stimulus. Hence, nothing is lost by a smaller dosage in the adults, but the reactions are largely prevented.

Repetition of Immunisation—Repeated stimuli are, however, essential for strong and lasting immunity. For this reason, the preliminary immunisation requires at least two doses of 0·5 c.c. each given at an interval of 4 to 6 weeks. This first course of immunisation protects a child for some time, but the immunity wanes sooner or later. A "booster" dose of 0·5 c.c., given one year after the preliminary immunisation, prevents this waning and in addition produces such large quantities of the antitoxin as ensures sustained protection. The "booster" should, therefore, always be given.

Further repetition would depend upon the environment. If it is conducive to repeated natural stimuli, the toxoid need not be repeated. On the other hand, re-immunisation would be necessary to be repeated every 5 years, if diphtheria becomes very scarce in the country. The dose for such repeat inoculations should, however, be the adult dose, that is 0·1 c.c. (5 Lf). The reasons given above explains the basis of this reduction in dosage for re-inoculation.

The adults too would need re-immunisation under the condition which demands repeat for those artificially immunized during infancy. The dose should naturally continue to be 0·1 c.c. (5 Lf), every 5 years.

Measurement of Response—The effect of immunisation is determined in one of the two different ways: (1) Schick test, and (2) direct measure of the antitoxin developed in the serum.

(1) *Schick test*: The test consists of injection of a Schick test dose of diphtheria toxin intracutaneously in the forearm. This small quantity of toxin, which is equivalent to only 1/50 m.l.d. for guinea-pigs, produces inflammatory and mild necrotic lesion at the site of injection, if the person is not immune to diphtheria. Immune persons, however, do not show this toxic reaction of the skin.

This test also measures indirectly the quantity of antitoxin present in the serum. If an individual contains in his serum less than 0·01 International unit of diphtheria antitoxin per c.c. of serum, his skin will suffer from toxic reaction due to Schick test dose of diphtheria toxin. If, however, the quantity of antitoxin exceeds 0·03 I.U. per c.c. serum, the test dose of toxin is completely neutralised, and, hence, no toxic reaction appears at the site of inoculation. A positive reaction, therefore, indicates susceptibility to diphtheria as the individual has no antitoxin, or less than 0·01 I.U. of antitoxin per c.c. serum; while a negative reaction indicates immunity against diphtheria as the individual contains in his serum over 0·03 I.U. of antitoxin per c.c. serum.

The toxic reaction consists of redness, induration, and mild necrosis of the skin at the site of inoculation. In dark-skinned individuals development of redness is difficult to make out. Hence, detection of toxic reaction would depend entirely on the evidence of the nodule, which develops well

between 2 and 3 days after inoculation. Shedding of the skin of the site, a few days later, shows evidence of necrosis.

This toxic reaction, however, should be differentiated from allergic reaction for correct interpretation of the result of Schick test. The allergic reaction, which is by and large vasomotor in nature, appears much earlier than the toxic reaction. Nevertheless, a control preparation is used for unmistakable differentiation between toxic and allergic reactions. This control consists of the same Schick-test-toxin, which is used for test, but is heated at 70°C for 5 min. to destroy the toxin. The control, thus, contains the allergens but not the toxin. If the tested individual is allergic to test preparations, he will react equally to the test and the control preparations. In an individual, who is susceptible in addition to being allergic, the toxic reaction would follow the allergic reaction at the site of injection of the Schick toxin, while the site of injection of the heated control would regain normality. On the other hand, one immune but allergic would show the same allergic reaction in both the sites, and no toxic reaction at all.

The Schick conversion rate (*S.C.R.*) is the ratio of the number of Schick positives who are converted to Schick negatives with the help of a diphtheria prophylactic, to the total number of Schick positives taken up for immunisation. This rate, therefore, indicates the potency of the prophylactic. The stronger the prophylactic, the higher the rate, till the ratio becomes unity, that is 100 per cent of the Schick positives are converted to Schick negatives by the prophylactic.

(2) *The direct method* of determination of response is the measurement of the quantity of antitoxin produced by the prophylactic. The serum of the immunised is required to be titrated against standard diphtheria toxin, both before and 2-4 weeks after injection of the prophylactic. The titration is usually done on the rabbit skin, and the actual quantity of the antitoxin, developed per c.c. of the serum, is expressed in terms of International units. The difference between the figures of the two tests—before and after immunisation—indicates the rise.

The test is a very accurate indication of potency of a prophylactic provided the subjects are not previously immunised. It has been said before that immunised are sensitised to the antigen. Injection of any prophylactic would produce very large response in the highly sensitised. The rise in antitoxin in such cases would measure the sensitivity rather than the potency of the prophylactic.

However, the need for a specialised technique and large number of rabbits make this test unsuitable for large-scale application. The Schick test would, therefore, be the choice when the immunity or susceptibility of a large population requires to be investigated.

The potency of a prophylactic can be measured in the laboratory in two different ways: (1) The animals—usually the guinea-pigs—which are immunised with a given dose of the prophylactic, are challenged 4 weeks later with multiple lethal doses of diphtheria toxin. The larger the number of survivals, the more potent is the prophylactic. (2) The serum of the immunised guinea-pigs is titrated for its antitoxin content. The more the quantity of antitoxin developed with a prophylactic, the more potent it is.

Result of application of artificial active immunisation in the field: In Europe and North America diphtheria had been a scourge. Even epidemics were not uncommon. Now, only a few sporadic cases occur here and there, and it seems to be the adults who are more prone to be the victims. The children are no longer even a shade as susceptible as they were in the past.

There is no denying of the fact that mass immunisation of children has achieved this success. Steep fall in the incidence and mortality of diphtheria followed these mass immunisation campaigns. The correlation between mass immunisation and progressive disappearance of diphtheria is so close that there is no difficulty of attributing mass immunisation as the cause of prevention of diphtheria in the West.

Of course, the hygienic standards of these countries have improved simultaneous to enlarging the mass immunisation campaigns. This improvement has naturally contributed significantly to subsidence of diphtheria. Nevertheless, improved hygiene could not take all the credit for the control of diphtheria in the West. Mass immunisation has definitely contributed an enormous lot.

In the wake of prevention of diphtheria in children by mass immunisation has, however, followed the problem of adult diphtheria. The adults are now denied the privilege of sustained natural immunisation. Intensive artificial immunisation has made diphtheritic infections scarce. The children are well protected. They are neither diseased nor carriers. They cannot, therefore, supply the natural stimuli of small infections to their partially immune elders. These elders may have been artificially immunised in their childhood. But this immunity wanes later on so that they become susceptible when they are adult. This is perhaps the reason of increasing incidence of diphtheria in the adults of the West. Hence, in the mass immunisation campaigns the adults would need fortification with 0·1 c.c. (5 Lf) of a suitable prophylactic every 5 years.

D. Passive Artificial Immunity—Active immunisation is, of course, the ideal method of prevention of diphtheria. It not only produces sustained immunity but also the state of sensitisa-

tion to small antigenic stimuli. Passive immunity, on the other hand, is very short-lived, and leaves no impression whatsoever on the defence mechanism after its disappearance. There could, therefore, be no two opinions on the choice of active immunisation in preference to passive, whenever there is time to forestall infection with active immunity. Time is, however, the chief factor of such a choice, as active immunity needs a fairly long time to be effective.

Passive immunity, on the other hand, is effective immediately after administration of the passive immunising agent, that is diphtheria antitoxin of animal origin. Hence, when the need of protection is immediate, and active immunisation has been neglected, passive immunisation is the choice. Such a necessity arises, when a case of diphtheria is admitted inadvertently into a children's ward in a hospital, if, of course, these children have not been actively immunised before. Similarly, outbreak of diphtheria in an unimmunised children's hostel, an institution, or even a household, invites passive immunisation for control.

The dose of diphtheria antitoxin for passive protection is 1,000 International units. It is generally administered subcutaneously. For more rapid absorption, however, the antitoxin may be injected intramuscularly. Urgent protection against grave infection may even require doubling up of this dose.

Combined active and passive immunisation is advisable when it is desired to supplement the short-lived passive immunity by more lasting active immunity. This necessitates injection of the prescribed dose of a suitable prophylactic after injection of the diphtheria antitoxin. Both of these injections may be given on the same day but at different sites. Repetition of the prophylactic 4 weeks later produces active immunity at a stage when the passive immunity has almost disappeared.

Duration of passive immunity depends on (1) the dose of the antitoxin and (2) the sensitisation of the recipient to the serum proteins of the animal supplying the antitoxin.

Larger dose of antitoxin prolongs the duration slightly longer than that obtained with a smaller dose. The concentration of antitoxin in the serum of the passively immunised tapers off gradually. Hence, disappearance of a larger concentration takes a little longer time than that required for a smaller concentration.

Previous sensitisation to horse serum proteins, which carry the antitoxin, however, limits the duration more seriously. These foreign serum proteins are eliminated more and more rapidly with increasing sensitisation. Hence, if the passive immunity lasts about a month after the first administration of horse-derived antitoxin, the duration may be reduced to as short as a fortnight, if the recipient has been sensitised before with any of the horse serum products. Repeated administration of horse serum products, therefore, significantly reduces the duration of passive immunity obtained with horse-derived diphtheria antitoxin.

MANAGEMENT OF DIPHTHERIA

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Neutralisation of the circulating toxin as quickly as possible remains the main object in the treatment of diphtheria. Early treatment gives the best chance of cure and minimises complications. Treatment therefore should be started immediately in suspicious cases even on the basis of clinical features alone, bacterial cultures only serving the purpose of confirmation of diagnosis. Diagnosis of the common types of diphtheria is missed not because of the difficulty in diagnosis but because of carelessness. Routine practice of examining the throat of a child for detection of the characteristic diphtheritic membrane, specially when a child is seen for complaints like sorethroat, difficulty in swallowing, salivation, cough with husky voice is obligatory.

Antitoxin

Antitoxin is the mainstay of treatment. Administration of diphtheria antitoxin serum early in adequate dose saves nearly every patient and prevents any serious damage to the heart and nervous system. The size of the dose is arbitrary and *"should be too large rather than too small"*. In deciding the dose, severity of the infection, duration of the disease are to be taken into consideration and not the age.

Administration of antitoxin—The recommended dose should be given as *single intramuscular injection*. Divided dosage given in repeated injections must never be encouraged. The injection is given at the outer aspect of thigh at the junction of upper and middle third. In very severe cases half the amount of recommended dose may be given intravenously. Antitoxin must never be injected subcutaneously. Even at the risk of repetition, it must be impressed that in case of suspicion of diphtheria do not wait until positive culture report

is obtained. *It is better to administer antitoxin in error than to wait 24 or 36 hours and lose a life.*

Intravenous antitoxin—Intravenous antitoxin is used only in very urgent cases as it has its own hazards. In laryngeal cases it may be necessary to give antitoxin intravenously to hasten the absorption with a view to avert tracheotomy. The injection must be given very slowly diluted with 20 per cent glucose solution. In all cases before giving serum intravenously sensitivity to serum must be tested as a routine. If there be any evidence of sensitivity intravenous serum should not be given even after desensitisation.

TABLE OF DOSAGE OF ANTITOXIN

Type of disease	Dose (in units)	Route of administration
Nasal	20,000	I.M.
Tonsillar		
Unilateral	40,000	I.M.
Bilateral	60,000	I.M.
Nasopharyngeal		
Moderate	60,000	I.M.
Severe	80,000	I.M.
Laryngeal		
Larynx, tonsils ...	80,000	Half the amount I.V., remaining half I.M.
Larynx, nasopharyngeal.	1,20,000	

Precautions in giving antitoxin—1. Before injecting antitoxin inquire about history of sensitivity to horse serum.

2. Inquire if the patient has received horse serum injection previously.

3. Inquire as to the history of allergic disease particularly asthma, asthmatics are very liable to allergic reaction to serum.

4. Adrenalin hydrochloride solution (1 in 1000) should be ready in a syringe by the bedside in every case before antitoxin is injected, so that no time is lost in injecting adrenalin when there is allergic reaction to antitoxin injection.

If there be any such history, perform intradermal test for sensitivity. Take 0·1 c.c. of the antitoxin to be injected, diluted 1 in 10 with normal saline, and inject intradermally. Read the result at intervals of 10 and 20 minutes. Sensitivity is shown by local redness, induration and formation of wheal with irregular spreading margins. In case of such reaction the child should be desensitised. Before intravenous injection of antitoxin-sensitivity for serum should be tested as a routine.

Method of desensitisation—At interval of twenty minutes the antitoxin should be given as stated hereafter. The patient is closely observed for appearance of wheals, asthmatic symptoms, sneezing or shock during the process of desensitisation. One of the antihistamine drugs may be given parenterally before the injections are started.

1. 0·1 c.c. of 1 : 10 dilution *under the skin.*
2. 0·25 c.c. ,, ,, ,, ,, ,, ,,
3. 0·5 c.c. ,, ,, ,, ,, ,, ,,
4. 1·0 c.c. ,, ,, ,, ,, ,, ,,
5. 0·1 c.c. undiluted serum *under the skin.*
6. 0·1 c.c. undiluted serum *intramuscularly.*
7. 0·25 c.c. ,, ,, ,,
8. 0·5 c.c. ,, ,, ,,
9. 1·0 c.c. ,, ,, ,,
10. The remaining dose of the antitoxin intramuscularly.

(As recommended by Margaret H. D. Smith and as modified).

Serum should never be given intravenously to a serum sensitive patient even after desensitisation.

Even when serum is given intramuscularly to a child who is not sensitive to serum, there may be at times a sharp rise of temperature accompanied by chill, but there is no cause for alarm in these cases.

GENERAL CARE

Isolation : Complete isolation is necessary.

Rest : The child should be kept in bed and all forms of exertion to be avoided for three weeks at the least, even in a mild case. If the case is severe and treatment started late the rest period may have to be extended to 6 weeks.

Diet—Stick to a fluid : Diet should consist of milk, fruit juice and thin gruel. Too much fruit juice may be the cause of distension and vomiting. During early convalescence poached or soft boiled egg, mashed potatoes, breadcrumb with milk, can be added. During late convalescence more solid food like fish curry, rice, can be added.

Glucose : Use of glucose in the treatment of hypoglycaemia, often present, possibly due to liver damage, is important. Glucose may be given per rectum when vomiting is present. In severe cases glucose 10-20 per cent solution can be given intravenously in doses of 50-100 c.c.

If the disease occurs in a baby do not allow breast feeding, but milk the mother's breast and feed the baby with a dropper.

LOCAL TREATMENT

No form of local treatment is necessary. Irrigation, sprays, gargles are unnecessary, and may actually be harmful because of the danger of otitic complication. For swollen cervical glands hot moist application is comfortable.

Other Drugs and Control of Secondary Infection

Sulphonamides are of no value.

Diphtheria bacilli are sensitive to penicillin and aureomycin. Moreover both these drugs are of definite value in controlling the secondary infection due to streptococci and staphylococci. Penicillin also appears to reduce incidence of complications and renders carrier stage negative. But penicillin is *antibacterial* and *not antitoxic. It does not however in any way replace antitoxin,* and should be used only along with the requisite dose of antitoxin. Combined treatment gives considerably better results than treatment with antitoxin only. Penicillin crystalline sodium G can be given in doses of 1,00,000 units I.M. 8 hourly. Results with aureomycin, as recently observed in our hospital in a large number of cases, compare favourably with penicillin in combination with the antitoxin.

Ascorbic acid—Vitamin C in large doses has been advocated with the idea of a possible mitigating effect on the toxaemia, and because of the associated damage to the suprarenals in diphtheria. The effect of vitamin C therapy in diphtheria is open to doubt.

Special Varieties of Diphtheria

Nasal diphtheria—Antitoxin in doses of 10-20,000 units is usually sufficient. Instillation of penicillin 1000 units per 1 c.c. in the nose is helpful. It is worth remembering the possibility of nasal diphtheria in a child coming with nasal discharge or bleeding.

Cutaneous diphtheria—Besides injection of antitoxin in doses of 30-40,000 units intramuscularly, use local application of compress soaked in penicillin solution (500 units per c.c.).

Laryngeal diphtheria—In addition to the requisite dose of antitoxin as mentioned above, other measures to afford symptomatic relief to obstruction due to the membrane and swelling and spasm of periglottic structures, the following measures are recommended:

1. Atropine—may be given in doses of gr. 1/300 subcutaneously to relieve spasm.
2. A boiling kettle near the bedside with benzoic or eucalyptus added to the water (one dram to a pint) is helpful, as the patients feel great relief in warm moist atmosphere.
3. To allay restlessness small doses of bromide and belladonna (pot. bromide gr. v, tr. belladonna mii in 3ii of water given three doses daily; if necessary tr. camphor co. 5 minims may also be added).
4. Turpentine stupe on the throat, given frequently gives relief and may help to induce sleep. The neck should be greased and covered with flannel before the stupe is applied.

All arrangements must be kept ready for emergency tracheotomy. Laryngeal diphtheria cases are always to be treated in the hospital. Unusual restlessness with increasing respiratory distress as shown by suction of the suprasternal notch, lower ribs and epigastrium, gradually increasing pulse rate, cyanosis are indications for tracheotomy without undue delay.

Complications

Circulatory failure is the most serious and dreaded complication. This occurs more often between the 5th and the 14th day. The child becomes restless, pulse gets rapid and feeble, may be irregular, cyanosis may appear, and unless rapid attention is given, death frequently occurs. Once well marked signs of circulatory failure set in, little can be done in most of the cases. Prevention therefore remains the best course. Enforcement of rest and early administration of antitoxin go a long way in preventing such complication.

The child with such symptoms should be at once put in horizontal position and if necessary foot end of the bed may be raised. In very severe toxic cases glucose to the amount of 100 c.c. of 20 per cent solution given in slow intravenous drip should be given, and repeated as necessary.

Cortical adrenal extract in dose of 2 mg. given intramuscularly every 8 hours is of benefit in view of the fact that in very severe cases ending fatally adrenalin haemorrhage is not uncommon.

Cardiac stimulants *e.g.*, adrenalin hydrochloride 1 in 1,000 2 minims every 3 hours, strychnine gr. 1/120 I.M. caffeine sodii benzoas 2 grains 6 hourly I.M. are often advised, but their values are doubtful. Oxygen with a view to diminish cyanosis is given, but as the circulatory failure is chiefly a peripheral failure oxygen may not give marked or prompt relief. To allay restlessness bromides or small doses of barbiturates are given. In cases of marked restlessness one may have at times to give morphine in doses of gr. 1/16 to gr. 1/32. Diluted whisky sweetened with sugar may be helpful in acting as a diffusible stimulant as well as in inducing sleep (half a drachm is diluted and sweetened and given in sips).

Paralysis—Paralytic conditions need no special treatment except those on general lines. In cases coming with such paralysis it is known that toxin

has already been fixed in the nervous tissue and antitoxin can be of no value. But in those cases where antitoxin has not been given previously and the child has been brought within ten to fourteen days of an antecedent history of sore throat one may administer antitoxin. Vitamin B_1 quite often advised is also of doubtful value.

A child with soft palatal palsy may require nasal feeding with milk, malted food, fruit juice, etc. In cases of intercostal paralysis the child should be put in a respirator. In paralysis of the limbs recovery can be hastened by gentle massage of the limbs.

Respiratory Complications—With routine use of antibiotics, respiratory complications are expected to be few. In laryngeal diphtheria the disturbing cough and restlessness can be relieved by steam inhalation, small doses of atropine sulphate injection gr. 1/300 and sedatives as mentioned above.

For secondary respiratory complication sulphonamides may be used besides penicillin. Oxygen should be given freely. It is well known that tracheotomy favours such respiratory complications.

Convalescence

The requisite period of rest should be enforced. Undue hurrying over convalescence must never be encouraged. Gradual feeding on more liberal lines and tonics containing iron to combat with associated hypochormic anaemia are the usual measures to be taken. A plain ferri et ammon citras mixture containing 5 grains per dose given three times daily for a child 3 years of age is considered quite sufficient.

Carriers

Only about 10 per cent carriers carry virulent organisms, non-virulent carriers need no treatment. Penicillin in a total dose of 60,00,000 units spread over a period of 6 days usually eliminates all positive nose and throat carriers. Aureomycin also is quite good. For those who remain positive, after two weeks another course of penicillin should be given. Local drops of penicillin 1000 units per c.c. every 2 hours should be advised in nasal carriers. Persistence of carrier stage even after such intensive penicillin therapy should be considered for tonsillectomy and adenoidectony. But no operation should be advised earlier than 2 or 3 months after initial attack of disease or until careful examination including electrocardiographic examination shows no evidence of myocardial damage.

PRACTITIONERS' SERIES

TRICHLOROETHYLENE: A SUITABLE GENERAL ANAESTHETIC IN RURAL AND PRIVATE PRACTICE

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The modern surgeon has reached his present high standard of performance due to availability of a wide variety of anaesthetic agents, improved methods of haemostasis and innumerable chemotherapeutic agents. But the general practitioner or the doctor in charge of the small hospital has been unable to march forward in surgery to a degree that is expected of him mainly because, he has not a trained and skilful anaesthetist to help him. Usually a general practitioner is expected to handle only cases of minor surgery such as hydrocele and haemorrhoid etc., but, in actual practice, under the conditions prevailing in our country, he finds himself obliged to handle cases of obstructed labour, orthopaedic work, amputations, etc. Many of these operations can be performed under local infiltration anaesthesia and low (heavy) spinal anaesthesia, either of which can be administered by the general practitioner himself. There are, however, some obstetrical and surgical procedures that can be carried out only under a general anaesthetic. The general anaesthetics in common use by the general practitioner today are chloroform and ether but these agents are by no means safe, especially in unskilled hands. Trichloroethylene is a suitable general anaesthetic under such conditions where the services of a trained anaesthetist are not available at hand.

Trichloroethylene has a number of advantages over chloroform and ether. Induction with chloroform is pleasant and quick. This is not so with ether which is highly irritating to the mucous membrane of the respiratory tract. Trichloroethylene possesses the pleasantness of chloroform without its toxic effects. For maintenance, too, trichloroethylene is safer than chloroform, being free from the toxic after-effects usually associated with prolonged chloroform anaesthesia. Not more than 1 dram of trichloroethylene is required to produce anaesthesia lasting for about 45 minutes so that it is also more economical than either ether or chloroform. Safety and economy combine to make it an ideal anaesthetic for the requirements of the general practitioner and small rural hospitals.

As in the case of all inhalational anaesthetics, the presence of cardiac insufficiency, albuminuria, anaemia, acute respiratory diseases etc., render the use of trichloroethylene hazardous.

During the past seven years I have, under general anaesthesia with trichloroethylene performed a wide variety of surgical procedures, such as forceps applications including many at midpelvic level often with bilateral episiotomy, manual removals of placenta, internal podalic versions, emptying the uterus of residuary matter in cases of incomplete abortion, traction and alignment of fragments in fractures of all grades of severity with preliminary cleansing, trimming of margins and suturing ; reduction of dislocated joints ; amputation of arm and fingers ; dissection of cysts ; removal of splinters by incision. On a few occasions I have operated on elephantoid scrotums and strangulated herniae using trichloroethylene to supplement spinal anaesthesia with cinchocaine hydrochloride.

I have not met with even one mishap due to tricholoroethylene throughout the 7 years. The youngest patient was a 3½ month old baby for the incision and scraping of a chronic abscess on the scalp. The longest period during which trichloroethylene has been given was 1 hour 45 minutes in a case of bear mauling with extensive laceration of the face and sclap.

Apart from operative procedures, I have used trichloroethylene in two instances where refractory children of 6 and 2 years of age had to be anaesthetised for radiological and ophthalmological examination.

In my clinic, trichloroethylene is administered with a Rigby Buxton's modification of Junker's apparatus. Air is passed over a column of nearly 2" of trichloroethylene and induction is done slowly. Premedication with atropine sulphate gr. 1/100 and, if necessary, morphine sulphate gr. ¼ is given half to one hour before anaesthesia. It has been categorically stated, by authorities on the subject, that trichloroethylene does not produce relaxation of muscle but I have never had any difficulty in performing internal podalic version and manual removal of the placenta under trichloroethylene anaesthesia.

One can strongly recommend trichloroethylene (Trilene*) as the general anaesthetic of choice for private practitioners and doctors in-charge of small hospitals.

* A proprietary preparation.

CASE NOTES

AN OBSTINATE CASE OF CEREBRAL MALARIA

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On 7th January, 1953, a male child of three years became unconscious ; convulsions started with twitchings of the eyes preceded by rise of temperature in the previous night.

On examination : Temperature—101°F ; pulse—140 per minute with irregular respirations ; lungs—clear ; no rigidity of the neck ; the spleen and the liver were just palpable below the costal margin. Blood film showed many M.T. rings.

The patient at once was put on 0·12 g. mepacrine by injection intramuscularly ; bowels were moved by soap water enema, continuous cold douche over the head was used and the extremities were kept warm with hot water bottles under blankets. In the afternoon the child became semiconscious and the temperature came down to 99°F with pulse 120 per minute and irregular respirations. He had retention of urine and tympanitis. Convulsions and twitchings were still present. Mepacrine second injection was given, turpentine stupe applied over the abdomen and urine was brought out with a catheter.

8-1-53—The temperature came down to normal with subsidence of all the symptoms and signs. Mepacrine 0·10 g. tablet was given twice daily by mouth with alkaline mixture and glucose drinks. The child kept well until the 9th afternoon while the same treatment was being continued.

10-1-53—At 7 A.M. the patient again became unconscious preceded by a rise of temperature in the previous night. Temperature—102°F ; pulse—144 per minute, respiration—Cheyne-Stokes type. Convulsions were present. The blood slide still showed the presence of M.T. rings. Mepacrine was changed, quinine bihydrochlor 2½ grs. intramuscularly was given with other ancillary treatment. In the afternoon the patient became conscious but the temperature was still 100°F, pulse 130 per minute and respirations hurried. Quinine was given in 2 grains doses by mouth twice daily with alkaline mixture and plenty of glucose drinks.

11-1-53—The temperature came down to 99°F, and was stationary until evening. Pulse was 120 per minute and respiration was irregular. Quinine bihydrochlor 2 gr. was given intramuscularly and

mepacrine 0·10 g. tablet by mouth was continued. The patient started vomiting.

12-1-53—The temperature became normal but the vomiting persisted. Paludrine one tablet 0·1 g. by mouth was tried and retained. The child remained conscious with normal temperature till 13th night 8 P.M., when the child again became unconscious. Twitchings of the eyes, convulsions and trembling of the left extremities continued indicating irritation of the right side of the brain. The blood still showed M.T. rings but they were scanty. Quinine bihydrochlor gr. 2½ I.M., penicillin sodium G 2½ lakhs intramuscularly for prophylaxis, sodium luminal gr. 1½ in mucilage 5 per cent every three hours rectally for sedation were given. Mepacrine 0·12 g. I.M. was given in the evening.

14-1-53—The temperature rose upto 100°F, other conditions remaining the same. The blood slide still showed M. T. rings and round worm ova were found in the faeces. In the evening the temperature rose to 102°F. On lumbar puncture the C.S. fluid was found to be under pressure and transparent. Unfortunately the microscopic examination could not be done. Quinine bihydrochlor gr. 2½ I.M., whiffs of chloroform to check the convulsions and sodium luminal 1½ gr. in 5 per cent mucilage rectally every three hours were given. In the evening mepacrine 0·12 g. I.M. was given and rectal saline by drip method was administered.

15-1-53—The patient was semiconscious with low delirium, twitchings of the eyes with convulsions and trembling of the right extremities showing change in the site of irritation in the brain from right to left side. Malarial parasite was negative in peripheral blood. Quinine bihydrochlor 2½ gr. I.M. in the morning and mepacrine 0·12 g. I.M. in the afternoon, penicillin sodium G, rectal saline and luminal sodium rectally were continued.

16-1-53—The temperature came down to 98·4°F, and remained so till evening. The patient had slight convulsions with twitchings of the eyes and trembling of the extremities. Paludrine 0·10 g. by mouth, glucose drinks and luminal were continued.

17-1-53—The temperature became normal but slight twitchings of the eyes and convulsions were still present with excessive thirst. It was decided to put him on nivaquine 0·20 g. one tablet twice daily by mouth. Luminal was stopped.

18-1-53—The condition of the patient was same and the same treatment was continued.

19-1-53—All the troubles disappeared and the child became conscious and nivaquine one tablet a day was continued for another three days.

He was discharged after being dewormed from the hospital on 24-1-53.

Points of Interest

1. Malarial parasites in the peripheral blood were negative after four injections of mepacrine 0·12 g., 5 tablets 0·10 g. by mouth, 10 grs. of quinine bihydrochlor in four injections, 4 grs. by mouth and paludrine four tablets of 0·1 g. each by mouth, in a child 3 years old.
2. Although there was no rise of temperature and the peripheral blood was negative for malarial parasite for several days, convulsions and twitchings did not disappear completely.
3. Unless laboratory facilities were available a patient like this could not be treated successfully with so much antimalarial drugs and the child could not be saved. Complete cure of the case without leaving any signs of damage in the brain after so much clinical manifestations of the severe attack is noteworthy.
4. Repeated attacks of unconsciousness inspite of proper treatment for the disease is of rare occurrence.

Acknowledgment

I am grateful to my chief, Dr. F. Mahler, for his valuable suggestions and advice, and to my assistant Dr. B. C. Sarker and Sree Suren Mazumder, for their untiring assistance and to Mr. W. D. Simpson of Telepara Tea Estate, for the consent to publish this note. I must also thank Dr. P. N. Roychoudhury of Binnaguri Central Laboratory for his valuable laboratory help.

PULMONARY AMOEBIASIS MASQUERADING AS PULMONARY TUBERCULOSIS

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The incidence of pulmonary amoebiasis is common in tea garden practice. Though some observers have ventilated it, its occurrence has not been sufficiently realised. Ten years back, in checking up a series of 17 cases, recorded as cases of pulmonary tuberculosis, I found many of them were working for years and are still working without any complaint or wasting whatsoever. No treatment was given to them. 9 cases had no tubercle bacilli in the sputum. 3 of these had *E. histolytica* in stool with pulmonary signs of consolidation, one case was of pneumoconiosis and 1 of eosinophilic lung. The rest, *i.e.*, 4 cases, could not be properly investigated. These and a good number of cases of pulmonary amoebiasis encountered during the past years, led me to believe that many pulmonary amoebiasis cases are clinically reckoned as cases of pulmonary tuberculosis.

The symptoms and findings of pulmonary amoebiasis are one or more of the followings: Cough, pain in the chest, anorexia, weakness, haemoptysis, low fever, with or without tender and enlarged liver. Most cases have history of dysentery. Signs of consolidation of lung with

numerous rales and rhonchi are found over the base of the right lung. The faeces may contain *E. histolytica*.

Differential diagnosis—One suffering from anorexia, anaemia, cough, low fever and specially haemoptysis presents the picture of tuberculous affection of the lungs and the presence of rales and rhonchi leads a physician to label it as a case of pulmonary tuberculosis. But a careful observation will reveal that the patient is not as ill and wasted as in pulmonary tuberculosis. Absence of tachycardia is an important differentiating point. The history of dysentery and a tender liver will undoubtedly lead to a correct diagnosis. Moreover, a few injections of emetine will work wonders in amoebiasis cases. The absence of tubercle bacilli in the sputum and the presence of *E. histolytica* in the stool and rarely in the sputum will confirm the diagnosis. Pneumonia is easily differentiated by the absence of acute toxaemia and dyspnoea. The therapeutic tests of sulpha drugs and penicillin are also helpful. Blood and sputum examinations will clinch the diagnosis of eosinophilic lung and pneumoconiosis. Special emphasis should be given to the general condition of the patient, pulse rate and the presence of a tender liver and laboratory examination of the sputum for tubercle bacilli; as a case lightly labelled as pulmonary tuberculosis is liable to serious psychological and social consequences and a case who is easily curable or amenable with a course of emetine, is 'doomed to live' the life of a tuberculous patient owing to the ignorance of or missed diagnosis by the physician.

Prognosis is good both with treatment and as regards life. Very few become disabled permanently.

Treatment is usually easy, unless in very chronic and refractory cases. As the trophic form of *E. histolytica* is the causative agent, a course of emetine, if necessary with some stimulant like strychnine or ephedrine effects a cure. Other antiamoebic medicines can be given as a follow-up treatment.

Illustrative Case Report

An indian lady, wife of a tea garden clerk, got haemoptysis and complained of pain in the chest for a few days. She was a very thin woman with a pulse rate of 72 per minute. Nothing abnormal was found on auscultation. The liver was enlarged and tender. Her morning and evening temperatures were recorded for a week. It was slightly raised in the evening. The normal pulse rate and the tender liver enabled me to exclude clinically pulmonary tuberculosis. The stool and sputum were examined for *E. histolytica*. The stool was negative but the sputum was doubtful first time. The laboratory assistant asked for a second specimen of the sputum and it was positive with trophic form of *E. histolytica*. The differential W. B. C. count revealed a slightly increased neutrophil cells leucocytosis. A course of emetine injection cured the patient of her ailments.

Acknowledgment

I have to thank Dr. F Mahler for valuable instructions on the subject and Dr. N. Bagchi for demonstrating *E. histolytica* in the sputum.†

† Read at the Annual General Meeting of the Dooars Branch, I.M.A. on 28-3-54.

APPEAL FOR CONTRIBUTIONS FOR MEDICAL RELIEF IN FLOODED AREAS

Dear Colleagues,

You must be aware of the grim tragedy brought about by the terrible floods of this year. It is a challenge to the whole country. Human misery which cannot be estimated, calls for immediate relief.

In this appalling catastrophe, funds are urgently needed. State and local branches of the I.M.A. in the areas concerned have started medical relief work.

I appeal to members of the medical profession on behalf of the I.M.A. for generous contributions and ask every one of them to remit the same to the Central Office (Distress Relief Fund Account) at Hanging Bridge, Daryaganj, Delhi 7, as soon as possible. I am sure they will rise to the occasion.

Fraternally yours

S. C. Sen

President, I.M.A.

Delhi.
16-10-54.

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MITES AND TROPICAL EOSINOPHILIA

Invasion of the alimentary canal and urinary tract by mites has been held responsible in some instances for enteritis, nocturnal enuresis and haematuria. Mites of various species occur in stored foodstuffs such as cheese, sugar, maize and dried fruits, and in the debris of houses and shops, but evidence of their pathogenicity is by no means clear. The fact that they are found in food and faeces has led some to think that ingestion of myriads of these small creatures may cause intestinal disturbances by mechanical irritation or by the toxins they may produce. Others consider that they are entirely harmless and their presence in the faeces is purely accidental. Dickson[1] and Mackenzie[2] investigated some cases of urinary disorders and found on cystoscopic examination mites in the mucous membrane of the bladder to which they ascribed the symptoms. It has been stated that persons whose work brings them into contact with materials infested with certain mites are apt to suffer from forms of dermatitis known as "grocer's itch" and "copra itch".

There was no record of mites in the human respiratory tract until ten years ago when Carter, Wedd and D'Abrera[3] working in Ceylon observed their presence during the examination of a sample of sputum for tubercle bacillus. This led to the examination of further samples of sputum from the same patient and from other patients suffering from chest complaints. As mites of various kinds were present in the dust and brushings obtained from the hospital and laboratory premises, they took strict precautions to exclude air-borne contamination, and yet found mites in the sputum of as many as 17 out of 28 patients with respiratory disorders. The genus *Tarsonemus* was the most prevalent type, while *Tyroglyphus* and *Carpolyphus* were less frequent. In the case of the former only adults were seen, but the last two types were present in all stages of development from eggs to adults of both sexes (including egg-bearing) females. Carter and his colleagues (*loc. cit.*) emphasised that the mites were scarce; a concentration technique was used, and even then it was unusual to find more than one or two mites in any one sample, so the ordinary method of sputum examination was unlikely to show them. They came to the conclusion that the mites were derived from the lungs and/or bronchi and had been inhaled from the air. They also pointed out that the mites seen in the sputum were not related to those species which are known to be parasitic in monkeys and in certain other mammals, and capable of causing pathological changes in their lungs and air passages, but were species which are commonly present in the stored products and debris of various kinds.

It was about this time that a good deal of interest was being taken in the aetiology of tropical eosinophilia after Weingarten[4] had reported 81 cases of this syndrome of chronic asthma like dyspnoea, variable and diffuse x-ray opacities in the lungs and eosinophilia in the blood, occurring in people living in the tropics, especially India,—for which organic arsenicals are almost specific. Two main theories were being discussed as to its origin,—allergy and infection, and the Ceylon workers suggested that the condition might be due to mite infestation of the respiratory system. It seemed possible that persons sensitive to a mite-laden atmosphere might show allergic manifestations in their lungs and blood. Two observations tended to support this view: first, some of their patients had eosinophilia (6 to 66 per cent) and secondly, following treatment with arsenic the numbers of mites in the sputum greatly diminished or were in macerated condition, the eosinophilia was much reduced and the symptoms improved. There is also the experimental evidence (Carter and D'Abrera[5]) of a monkey developing, after introduction of mite eggs into its trachea, spasmodic cough and later eosinophilia which persisted for some months. Other observers have also found mites in the sputum of tropical eosinophilia cases, but the mite theory has not been generally accepted on the grounds that the mites are present only in a small proportion of cases and that when present they are only a few in number. Workers at the Calcutta School of Tropical Medicine obtained negative results in most cases.[6,7]

In the preceding issue of the *Journal* we published an article in which Krishnan[8] des-

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[1] DICKSON, W. E. C.—*J. Trop. Med. & Hyg.*, **24**: 25, 1921.
[2] MACKENZIE, J.—*J. Roy. Army Med. Corps.*, **39**: 51, 1922.
[3] CARTER, H. F., WEDD, G. AND D'ABRERA, V. ST. E.—*Indian M. Gaz.*, **79**: 163, 1944.
[4] WEINGARTEN, R. J.—*Lancet*, **1**: 103, 1943.
[5] CARTER, H. F. AND D'ABRERA, V. ST. E.—*Indian M. Gaz.*, **81**: 284, 1946.
[6] Calcutta School of Tropical Medicine—*Annual Report*, 1948-50, p. 20.
[7] CHAUDHURI, R. N., *et al*—*Bull. Cal. School Trop. Med.*, **1**, (No. 2): 1953.
[8] KRISHNAN, M. K. R.—*J. Indian M. A.*, **24**: 5, 1954.

cribed an investigation on the probable role of mites in tropical eosinophilia. In 4 out of 39 cases mites were constantly present in the sputum, though only a few in number (two to four) and were absent once treatment was commenced. Being satisfied that the occupation of these four patients was such as not to constantly expose them to mite infected material or atmosphere, he examined their dwelling houses but found no mites in the dust and sweepings therein. Furthermore, he examined some of the local grain godowns, when six out of eight of them were found harbouring mites, and two very heavily. But none of the ten persons who were working in these infected godowns from six months to five years complained of any illness, nor had they any clinical and haematological evidence of the disease. Though somewhat unfavourable to the mite theory, this enquiry does not disprove it. In fact, until the aetiology of tropical eosinophilia is definitely settled we should keep an open mind towards the mite theory bearing in mind that mites, apart from having a direct action on the organ infected, may be the vectors of some organism such as that of typhus fever.

DISTRICT HEALTH CENTRES

It is high time to recall that the Bhore Committee Report of the Government of India which was published in 1946 was generally accepted in principle by the Government and the medical profession. The report stated *inter alia*: "A nation's health is perhaps the most potent single factor in determining the character and extent of its development and progress and any expenditure of money and effort on improving the national health is a gilt-edged investment yielding immediate and steady returns in increased productive capacity".

India became independent in the year 1947 and the National Government of India devoted most of their money and energy to make India self-sufficient in food production, during the last six years. The Government have also been trying to solve the enormous problems relating to housing, safe drinking water supply and sanitary surroundings which are really pre-requisites of a healthy life. Sufficient attention has yet to be paid to communications in rural areas, improvement of nutritional standards, elimination of unemployment and provision of adequate wages for all types of workers.

We note with pleasure that the Government of West Bengal and some other State Governments in India have already been establishing rural health centres on the lines suggested in the Bhore Committee Report with necessary modifications. We would only remind the Government, in this connection, to arrange for appointment of at least two whole-time medical officers in each primary rural health centre, as recommended by the Bhore Committee. For maintaining efficiency, it is also necessary for the Government to pay adequate salaries and allowances to the medical and allied staff working in rural areas.

The Bhore Committee devised two sets of programmes, one short-term and the other long-term. The Committee, however, emphasised that even in the initial stages, it was necessary to establish a few fully equipped secondary centres at the district headquarters. In the near future, due to financial and other reasons, it may not be possible for the Government of India and the State Governments to establish district health centres with 2,500-bedded hospitals attached to these centres, as per long-term programme of the Committee. But we strongly feel that every State in India must take immediate steps for establishing at least a few secondary health centres at the headquarters of those districts or sub-divisions which lie far away from the capital cities. To start with a 200- or 250-bedded hospital may be constructed with provision for expansion as and when necessary. Apart from the question of appointment of sufficient public health and ancillary staff for the area concerned, it is essential to arrange for specialist service in these hospitals, so that the poor people of such outlying areas might not have to run to the far away cities for obtaining expert advice from the specialists.

In the short term programme of the Committee's Report, the Committee recommended appointment of specialists for medicine, surgery, obstetrics, radiology, pathology and bacteriology, and dental surgery. As eye diseases are fairly common and as blindness in India is preventable to a very large extent, we are of considered opinion that appointment of qualified and trained eye specialists at these centres is essentially needed, even at the initial stages. Argument similar to those advanced in regard to eye diseases would also apply to venereal diseases which, however, may be tackled by other medical officers after necessary training in this speciality. In the long run, however, some of these outlying secondary health centre hospitals must be fully equipped for rendering all types of specialist treatment.

CURRENT MEDICAL LITERATURE

Experimental Studies on Amoebic Liver Abscess

YOSHIMURA (*Keio J. Med.*, **2** : 30, 1954) gives in the following lines the summary of his observation on the influences of associated bacteria and the decrease of host-resistance upon the production of the abscess :

Entamoeba histolytica growing in culture media were washed with Ringer's solution by centrifugation to get rid of as many associated bacteria as possible and then they were added with pure culture of strepto- or staphylococcus. This mixture of amoebae and bacteria was inoculated directly into the liver of rats. Though abscesses were produced in many of the rats inoculated, amoebae were not found in them at all. As it was considered that the vitality of amoebae might be impaired by the washing with Ringer's solution, pure culture of strepto- or staphylococcus was added directly to the culture of amoebae without preliminary treatment with Ringer's solution. Inoculation of this amoebae-bacteria mixture also did not give a higher rate of the production of amoebic liver abscess as compared with control experiments.

Injection of antibiotics after the inoculation much reduced the death of the experimental animals and abscesses produced were small in size and amoebae were found in none of them while in the control animals they were found in 30 per cent of abscesses produced.

Strains of amoebae associated with a single strain of *Escherichi coli* or *Clostridium perfringens* produced abscesses in rather a small percentage of animals inoculated and amoebae were detected in none of the abscesses.

To reduce the resistance of host to pathogenic microbes, CCl_4 or inulin was administered before or after the inoculation of amoebae. Definite effects of these substances were, however, not recognized partly due to the premature death of experimental animals.

In the experimental production of amoebic liver abscess in rats, influence of the growth of associated bacteria was highly evaluated in the previous paper of this study. In the current experiments, several species of bacteria were added to the culture of amoebae and the amoebae-bacteria mixture was inoculated to rats. The effects of bacteria were not recognized in these experiments. Injection of antibiotics prevented the production of amoebic liver abscess and the inoculation of monobacterial culture of amoebae also failed to produce the amoebic liver abscess. These facts suggested also the necessity of the bacterial activity in the production of amoebic liver abscess. Attempts to produce amoebic liver abscess under the conditions of reduced resistance of host with administration of CCl_4 or inulin was unsuccessful.

Experimental Transmission of Giardia Cysts

RENDTORFF (*Am. J. Hyg.*, **59** : 209, 1954) gives in the following lines the summary of his observations on experimental transmission of *Giardia lamblia* cysts :

Out of a total of 40 men receiving from 1 to 1,000,000 *Giardia lamblia* cysts, 21 (52·5 per cent) became infected. None of 21 men who served as controls became infected.

All of the 13 men who received from 100 to 1,000,000 cysts became infected. It appears, therefore, that a very high percentage of the men in an adult population are susceptible to infection if the dosage of parasites they receive is sufficient.

Eight (36·4 per cent) out of 22 men who received from 10 to 25 *Giardia* cysts became infected. The fact that only a few cysts will establish the infection indicates that avenues of infection where it is probable that only a small number of cysts would be transferred may be of importance.

The prepatent period of the infections, as based upon the first detection of parasites in stools by the routine laboratory methods used in this study, ranged from 6 to 15 days and averaged 9·1 days in the case of infections adequately studied.

One of the most striking features concerning the biology of the experimental *Giardia* infections was their tendency to disappear spontaneously. Twelve out of 14 infections studied adequately in this regard showed this phenomenon. Among these infections the duration of parasites present in stools ranged from 5 to 41 days and the frequency distribution of these cases is given. Two infections apparently persisted as long as they were observed or at least for 129 and 132 days.

Transient changes in the stool pattern toward looser and more frequent stools were associated with the first appearance of parasites in some of the infected individuals. Among infections adequately studied, 4 showed a marked change in stool pattern, 5 cases showed a moderate to questionable change and in 6 no change was discernible.

In no instance did any clinical illness or subjective complaint occur among the subjects which could be attributed with certainty to the *Giardia* infections.

Malaria Transmission in Uttar Pradesh

ISSARIS AND OTHERS (*Bull. World Hlth. Org.*, **9** : 311, 1953) give in the following lines the summary of their observations :

Considering together the results of parasite studies made on infants and the entomological findings, it can be said with certainty that in the Tarai, Naini Tal District, malaria transmission occurs in the pre-monsoon months (March, April and May), during the monsoon period (July, August and September), and also during the post-monsoon period (October and November). Although the entomological findings do not by themselves show that transmission occurs during the months of December, January and February, analysis of the infant parasite-rates proves that a certain amount of transmission occurs during these months also.

The vector species in this area are *A. fluviatilis* and *A. culcifacies*. *A. minimus* is virtually absent. *A. culicifacies* is responsible for transmission during July, August and September. *A. fluviatilis* is responsible for transmission during the rest of the period, namely October to June. It appears that the transmission started by *A. fluviatilis* during the pre-monsoon period is continued by *A. culicifacies* during the monsoon period, and that *A. fluviatilis* plays a further important

role during the post-monsoon period and after. *A. fluviatilis* in this area is no longer zoophilic but has an anthropophilic index of over 40 per cent.

Treatment of Molluscum Sebaceum

FINNEY (*Lancet*, **1** : 862, 1954) writes that molluscum sebaceum may be effectively treated by radiotherapy. Histological examination after irradiation of these tumours suggests that there is little quantitative difference in cytological damage over a wide range of dosage. A satisfactory tumour-regression rate follows a dosage level of 1500-1750r. A dosage above this produces an unnecessarily more severe and prolonged reaction.

Retrolental Fibroplasia and Oxygen Therapy

LAUMAN AND OTHERS (*J.A.M.A.*, **155** : 223, 1954) give in the following lines the summary of their observations :

In comparison of liberal and restricted oxygen therapy in premature infants, irreversible, cicatricial retrolental fibroplasia (RLF) appeared in infants in the group with high oxygen but not in the group with low oxygen. Reversible, vascular stage lesions occurred in the both groups, but with nine times the frequency in the group with high oxygen concentration. These differences were significant at the 5 per cent and the 0·1 per cent level, respectively. Excluding infants dying of recognized causes with no known relationship to oxygen therapy, the mortality rates in the groups with both high and low oxygen concentrations were the same.

The authors believe that RLF is directly related to the excessive administration of oxygen and can be controlled by severely limiting oxygen therapy to premature infants. Such restriction does not appear harmful. In the Bellevue Hospital Premature Nursery, oxygen is given only to definitely cyanotic infants, and then at measured concentrations below 40 per cent. Frequent attempts to discontinue therapy are made. Aerosol therapy is given to noncyanotic infants with compressed air.

Intestinal Protozoa in Mentally Deficient Children

BELIOS AND CROPER (*Brit. M. J.*, **2** : 805, 1953) write :

A pilot survey for intestinal protozoa was carried out with faecal specimens from mentally deficient children in Harperbury Hospital, Shenley, Hertfordshire, during which, besides direct examination and cultivation, a new concentration technique was used.

The results of this survey showed a very high infection rate among these children, most of whom were found to harbour from one to as many as five different species of intestinal protozoa. The rate of infection with *Ent. histolytica* was found to be 40 per cent, but it is believed that its incidence may be even higher.

A rare species of flagellate, *Enteromonas hominis*, was isolated in culture media from one specimen and maintained by subinoculation in Dobell's medium.

Piperazine in the Treatment of Threadworms

WHITE AND STANDEN (*Brit. M. J.*, **2** : 755, 1953) write that the results obtained from the clinical trial of piperazine hydrate, gentian violet, diphenan, and a lactose placebo as control showed that while gentian violet had a marked oxyuricidal effect (10 per cent cures) at a dose level of 1/6 gr. (11 mg.) daily per year of life, this was well surpassed by piperazine hydrate syrup when the dose level was in excess of 50 mg./kg. per day, and the cure rate reached 79 per cent. Though diphenan gave a cure rate of 17 per cent at a dosage of 100-600 mg. daily per year of life, this apparent oxyuricidal effect was discounted by the fact that 19 per cent cure was obtained with a lactose placebo control. The latter indicated that a spontaneous clearance of threadworms may be expected in approximately 19 per cent of infections. Thus piperazine hydrate syrup proved to be the most effective, while producing negligible side-effects; gentian violet was less effective, and was also undesirable on account of its nauseating effects and staining properties ; diphenan was ineffective. It is concluded that piperazine hydrate, at a dose level of 50-75 mg./kg. per day, is the drug of choice for the treatment of oxyuriasis in children.

Benzathine Penicillin Orally in Children

BRADLEY AND MACPHERSON (*Lancet*, **1** : 861, 1954) write that N. N'dibenzylethylenediamine penicillin (benzathine penicillin) was given by mouth to children of different ages, and serum-penicillin levels were estimated.

Benzathine penicillin 300,000 units ('Penidural' 5 ml.) maintained satisfactory serum-penicillin levels for four hours in children weighing up to 40 lb. and for six hours in children weighing up to 25 lb., and 600,000 units for four hours in children weighing 40-70 lb. and for six hours in children weighing 25-40 lb. Heavier children required correspondingly higher doses.

A scheme of dosage based on body-weight is given below for children :

Weight (lb.)	Interval between doses (hr.)	Units of benzathine penicillin (300,000 units = 5 ml.)
0—25	6	300,000
25—40	4	300,000
	6	600,000
40—70	6	900,000—1,200,000
70	6—8	1,200,000

Oral Cortisone in Infantile Eczema

SOLOMONS (*Brit. M. J.*, **1** : 1190, 1954) in reporting on 15 cases of infantile eczema treated with oral cortisone observes :

Temporary benefit usually resulted. One case showed toxic effects by growing an excess of hair on the face.

Infections which are easily masked by cortisone should be carefully watched for.

The most difficult point to arrive at in these cases was to determine upon a dose unlikely to produce toxic effects, and it was thought wisest not to exceed 75 mg. a day. This was adhered to except in three cases, in which 87·5 mg. daily was given for a short time. No other treatment was given, except when weeping lesions were present and local applications were essential.

CURRENT TOPIC

EMPLOYEES' STATE INSURANCE SCHEME (MEDICAL BENEFIT) SERVICE OR PANEL SYSTEM

CHAMANLAL MEHTA,

Representative of the I. M. A. on the E. S. I. Corporation.

Attempts are being vigorously made at present by the Employees' State Insurance Corporation and the States to implement the Employees' State Insurance Scheme in the country. There were two big hurdles which delayed the scheme being put into force :

1. The State Government's share in the expenses for medical relief;
2. The co-operation of the doctors in the country.

Fortunately Shri Giri on taking over the ministership of Labour at the Centre realised the importance of solving both these problems, if the scheme was to be started all over the country. With Shri Giri's direction and personal approach and Shri Subramanyam's sincere efforts, both these problems have been solved satisfactorily. The State Government's quota has been reduced from one-third to one-fourth and the co-operation of the Indian Medical Association has been secured. The work has now been actively taken up.

Besides Kanpur, Delhi and East Punjab, the scheme is being implemented in Bombay, Nagpur, Coimbatore and Calcutta. In due course, it will be extended to Ahmedabad, Sholapur and other industrial areas in the country.

The main objects of the scheme are to keep the workers healthy and fit and thus get increased production and efficient working in the factories. This is intended to be done by providing free medical benefit, cash allowances during periods of illness, accident and disablement benefit, old age pension and, in the event of death, maintenance allowance to the dependents for a certain period. It will thus be realised that the success of the whole scheme depends on the standard of medical benefit. The better the medical relief, the smaller the amount to be paid in cash benefits and the better and greater the production. The stronger becomes the financial position of the scheme, the greater the amenities that can be provided to the workers and their families.

There are two methods by which medical relief can be given to the workers. One is through full-time salaried doctors working at dispensaries specially started by the State Governments and the Corporation, and secondly through panel system—securing services of practising doctors on the basis of fixed remuneration per worker. The two systems are fundamentally different. It is very important and urgent for us in India to decide right now, which system should be adopted. Though it is within the right of every state in India to find the answer by trial and error, yet an experiment on a vast scale involving as it does crores of rupees and an ocean of energy, equally demands that the experiences of other countries as well as all aspects of the problem be taken into full consideration to avoid waste of money and effort and to achieve the objects in view. This question has been discussed by the medical profession the world over, by the Governments and by the peoples. It is now unequivocally accepted that the only system which will give satisfactory results is the one in which "the worker has a right and a scope to select his own doctor and the doctor to select his patient." This can be achieved only under the panel system. All the world over except in sparsely populated areas where doctors are not available in adequate number, the panel system is adopted.

In India, the Minister of Labour at the Centre and his Secretary hold the view that under the panel system and with full co-operation of the medical profession, the workers will get better medical relief. The officials of the Corporation and the Minister of Health at the Centre and the Director General of Health Services favour the service system. The opinion amongst the Ministers of the States is divided. The medical profession believes strongly in the principle of free choice of the worker to select his doctor. The employees have been indifferent. Labour, which is vitally concerned has remained unconcerned so far.

Under these conflicting views and uncertain policies, both the systems are being enforced. In Kanpur and Delhi, full-time salaried doctors are employed. It is well known that the results have not been satisfactory. Neither labour nor the doctors under the service are satisfied; a lot of discontent prevails. This situation has been reported in the meetings of the Corporation as well. In the Punjab, the scheme was started on the panel system, but without the co-operation of the Indian Medical Association. It failed. Shri Giri and Shri Subramanyam were quick to realise the defects. They made an approach to the Indian Medical Association and sought its co-operation. The latter quickly and willingly responded to the gesture. A meeting was held between Shri Subramanyam, the officials of the Corporation, the Director General of Health Services, Government of India, representative of the Finance Department of the Government of India and the representative of the Indian Medical Association. A gentleman's agreement was reached. The principle of panel system was accepted to be implemented wherever the adequate number of doctors was available, capitation fee to the doctors was agreed upon and full co-operation of the medical profession on the agreement arrived at was promised. This was reported to Shri Giri, who agreed with the terms of agreement and complimented the parties for the happy result.

Shri Giri and Shri Subramanyam have been able to solve the question of the quota of the State Governments in the expenses.

Obstacles removed, the work of implementing the scheme is now actively taken up. Bombay, Calcutta and Coimbatore will have panel system, but it seems the officials of the Corporation are trying to persuade the State Ministers to agree to adopt the service system elsewhere. Even after the agreement, the service sys-

TABLE 1—SHOWING PROS AND CONS OF THE SERVICE AND THE PANEL SYSTEMS

Service system	*Panel system*
1. The State Governments will appoint salaried doctors.	1. Any registered medical practitioner fulfilling the requirements can be utilised.
2. Dispensaries have to be started and run by the State Governments in certain localities. A certain number of workers are allotted to a particular dispensary.	2. Dispensaries of practising doctors are available near to the house of the insured worker. Each worker selects his own doctor.
3. A certain number of doctors are appointed at these dispensaries in proportion of approximately one doctor for 8,000—10,000 workers.	3. Each panel doctor can cater for 1,000 maximum, or even for a small number. The Corporation had fixed the maximum of 2,000 for a panel doctor. The Indian Medical Association in order to give efficient service has recommended only 1,000.
4. Doctors work during fixed hours. Outside those hours, one doctor in turn is available for emergency service.	4. Doctors are required to be available for 24 hours. The doctor selected by the worker attends him all throughout his illness.
5. Doctors are likely to be transferred to different dispensaries or to other posts in the State Medical Service. A worker is not sure which doctor will attend him when he is ill or that the same doctor will be available to him throughout one illness.	5. The doctor selected by a worker continues to be his doctor all the year round and all the time unless he desires to change his doctor.
6. Doctors under the service can be regimented and can be ordered to restrict the use of drugs and choice of treatment.	6. Doctors of the worker's choice are free to use any drug and method of treatment beneficial to the patient, just the way they do for their own private patients.
7. Doctors under the service system usually do not get a chance, nor have they an intention to establish any personal contact or develop feelings for the patient, because of the crowded attendance at the dispensaries, the likelihood of being off duty or transfer from that dispensary. These dispensaries will be very much of the same pattern as those existing at present in different towns and outpatients at different hospitals.	7. The doctor, as he is selected by the worker as his doctor, has all the interest for his patient and being permanently attached to a particular worker has to establish personal contact, create confidence, adopt a sympathetic attitude and render efficient service. If he does not do so, the worker will give him up.
8. The doctor is not particularly interested in the scheme. He is posted on duty at these dispensaries, very often transferred from the State Medical Service, where he has many advantages of better living conditions and private practice and is anxious to go back to his old post. He is new to the patients and their environments.	8. The doctor under the panel system has all his interest in the workers and is anxious to render efficient treatment and give quick relief. He is able to do so because he has been already working amongst the insured, who have selected him as their doctor. He has already made personal contacts with the workers and their families. He knows their environments, social conditions and mental attitudes.
9. Doctors under the service system can be controlled better for their lax certification and for unnecessary and over prescribing.	9. The same can be done in this also.
10. The salaried doctor will treat only the insured worker. The worker will have to find another doctor for the rest of the members of the family.	10. The panel doctor is free to attend to the members of the family of the worker. Workers will not have to have different doctors.
11. The system is said to be cheap. It is for the statisticians to work out properly whether it would prove cheap, considering the provision for leave pay, leave substitute, various allowances, pensions, cost of building and hiring premises for dispensaries, equipping and staffing them, maintaining them, maintaining supervisory staff, accounts department staff, central stores and its staff and leave pay, leave substitutes, allowances and pensions of all the staff of these departments and maintenance of buildings, etc.	11. The system is efficient. It cannot be very much costlier than the service system.

tem is adopted for Nagpur. If the scheme has to succeed and to avoid repetition of what has happened in Kanpur and Delhi, it is very necessary that one definite policy is adopted for all the States in the country. It is also very necessary that labour who are the real beneficiary should give to this question their serious consideration and decide what system they favour. If this is once done, the scheme will run on oiled wheels, without any difficulty being created on account of difference of opinion on the methods for giving medical relief. The Corporation, the State Governments and the Central Government will realise their responsibilities—financial and otherwise—and the medical profession will know their exact place in the working of the scheme.

I therefore very earnestly ask labour and their organisations to decide which system of medical relief they want and convey their decision officially to the Corporation and the State Governments.

To enable labour to consider this problem properly, I append hereto the pros and cons of the two systems (Table 1).

The points detailed in the Table need special consideration, when making a choice of the system :

1. The best medical relief is obtained—
   (*a*) When a patient selects his own doctor and in whom he has confidence;
   (*b*) when the same doctor attends the patient throughout the illness and keeps contact with him after the illness, studies his environments and economic, social and mental set up;
   (*c*) when the doctor feels interested in the welfare of his patient and his family and he is a doctor not only for a worker, but for his family ;
   (*d*) when the prevention of illness is kept in mind and advice is given to the patient on the subject.

These are possible only under the panel system and free atmosphere.

2. Has the scheme been launched with the object of giving cheap medical relief or on the principle of efficient medical treatment and preventive measures?

3. If the panel system is accepted to be adopted uniformly, there will be no delay in its implementation, doctors being available in adequate numbers in almost all the factory towns with their dispensaries ready. The workers know their own doctors. The doctors are already treating the workers and their families. The capitation fee and State Government's share in expenses are now fixed.

If the service system is selected, the State Governments will have to find or build premises for dispensaries, equip and staff them and find doctors to serve on the remuneration offered by the State, i.e., on the State Government Medical Service scale. It is difficult to find adequate and efficient doctors to take up appointments on the state medical service scale. The unfortunate experience of Kanpur is before us.

4. When the families of the insured are to be included in the scheme, it can be done smoothly and without much trouble and without much expense, under the panel system because the doctors are already there and their dispensaries are working. If they are to be absorbed under the service system, the State Government will have to enlarge the dispensaries, increase the staff and find more doctors. This is not a problem of easy solution. The time taken to achieve it will be long and the cost heavy.

5. In case the panel system is found not satisfactory, it can be scrapped at once without any loss to the State or the Corporation; but if the service system once started has to be scrapped because of its unsatisfactory working, it will be extremely difficult, a prolonged process and of heavy financial loss—the State Government having already sunk tons of money in dispensaries and departments. Which experiment should be preferred?

6. In sparse areas, where medical practitioners are not available, part-time or full-time salaried doctors will have to be employed, though it may not be ideal.

I appeal to the Labour Organisations and State Government Ministers to give their thought to this problem, before deciding what system they want for medical relief under the scheme, bearing in mind the fact that in Europe, where Insurance Scheme has been in operation for a long time, it is the panel system which is in vogue.

Though it is the prerogative of Labour to decide what system they want, it is also the right and privilege of the medical profession to express its views on the subject, for the information and guidance of Labour and its leaders. In view of the fact that change-over from panel system to service is very much easier than the reverse process, the profession would recommend that Labour adopt the panel system for all new centres, make a comparative study of the working of the service system operating in Kanpur, Delhi and Nagpur, with the panel system to be introduced in other places. When sufficient data have been obtained, they could finally make up their mind and vote for any system they liked. The medical profession is giving this advice in the best interets of Labour and the Profession.

NOTES AND NEWS

Meeting of the American Medical Association

At the 103rd meeting of the AMA held in San Francisco on June 20-25, 1954, the House of Delegates noted with interest the report that WHO, on the request of the Belgian Government was investigating the establishment of an International Medical Law. The House of Delegates adopted a resolution supporting the action of the Council of the WMA in informing WHO that any International Medical Law must be based upon an approved International Code of Medical Ethics and that only the doctors of the World were competent to formulate and adopt such a Code of Ethics.

Canadian Medical Association

At its annual meeting in Vancouver on June 14-18, 1954, Dr. T. C. Routley the General Secretary of the Canadian Medical Association retired. He held this position since 1923. Dr. Routley was then designated as President-elect of the Association, to be inaugurated as

President during the week of June 20, 1955 at Toronto at the joint meeting of the Canadian and British Medical Associations. Dr. A. D. Kelly became the General Secretary of the Association.

Seventy Five Years of Medical Progress

In April 1953, the first Western Hemisphere Conference of the W.M.A. was held in Richmond, Virginia. From the scientific papers presented at this conference, a book entitled "75 Years of Medical Progress" was published and has just been released.

First Medical Education Conference

The Proceedings of the first Medical Education Conference held in London last August will be available for display at the 8th General Assembly in Rome. This volume contains 804 pages and the price will be approximately £3 only.

Convention of the Association of Military Surgeons in U. S. A.

The 61st Annual Convention of the Association of Military Surgeons of the United States will be held November 29-30, December 1, 1954, at the Hotel Statler, Washington, D.C.

The program will cover a wide range of professional and scientific subjects which will include the Areas of Surgery of Trauma, Preventive Medicine, Chronic Disease and Preventive Psychiatry. On display at the meeting will be exhibits of the latest advances in the military medical sciences.

For the entertainment of the members and guests, a full schedule of events is being arranged. As in the past, one of the outstanding features is the Honors Night Dinner on December 1 at which the Sir Henry Wellcome Medal and Prize, the Gorgas Medal, The Stitt Award, the Louis Livingston Seaman Prize, and the Founder's Medal will be awarded.

The Association extends a most cordial invitation to medical and scientific personnel to be present at the Convention.

The Indian Science Congress

The 42nd session of the Indian Science Congress will be held in Baroda on January 2-8, 1955, under the presidentship of Prof. S. K. Mitra. About half a dozen well-known foreign scientists including Prof. T. Watanable of Japan, Prof. Paul Karrer of Switzerland, Prof. PAM Dirac of U.K. will attend the conference.

The foreign scientists, besides delivering popular and special lectures, would participate in important discussion and the session over, they would tour the country and visit important centres of research.

Exhibitions of special instruments (physical, surgical, etc.) glass goods, balances, special apparatus and equipment will be arranged during the session.

The Congress Session has been divided into thirteen sections, each presided over by a Sectional President.

Service of the Medical Profession Appreciated

Dr. Kailas Nath Katju, Home Minister, Government of India in an article recently published in the *Hindustan Times* writes :

I regard the Indian medical profession as a band of devoted selfless workers. We do not realize fully how much time every physician and surgeon spends in the free service of his poorer patients. I know in Delhi senior specialists who go and work on a purely honorary basis for many hours a day, seven days in the week, in several hospitals. The medical profession is indeed a noble one for its unselfish service to those afflicted with diseases. It occurred to me when I saw in these villages this absence of medical facilities, particularly for children, that it might be a good thing if the members of the medical profession, both private medical practitioners and those in Government service, and the district authorities could join together in this great enterprise of providing medical assistance to the villagers. The district authorities should place some transport at the disposal of a doctor for his weekly visit of three or four hours, once or twice a week, to neighbouring villages of his choice within a distance of 10 or 12 miles from his place of residence. He would visit regularly, at stated hours, and villagers not only in that particular village but in the neighbouring villages would be eagerly waiting for him and would take advantage of his treatment. This scheme was widely welcomed and I was happy to see that the district undertook to work it out in collaboration with the physicians practising nearby.

CORRESPONDENCE

The Editor is not responsible for any views expressed by correspondents

Improved Chemotherapy of Cancer

SIR,—In a recent paper (Mukherjee, *J. Indian, M.A.*, **23** : 328, 1954) I have shown that certain preparations of phosphotungstic and phosphomolybdic acid (called 9 : 1 and 8·75 : 1·25) have definite retrogressive action upon cancer. Further work has shown that these preparations also have similar retrogressive action upon sarcoma.

The activity of these preparations depends upon the method of preparation—even slight modification may give a weaker preparation. The phosphotungstic acid solution used is improved when the solution is made at a temperature of about 45°C. Keeping the solution at this temperature for about an hour is sufficient to make it ready for use. The phosphomolybdic acid solution is then added to this warm solution of phosphotungstic acid and the preparation is maintained at this temperature for two hours. By this procedure the yield of the anticarcinogenic fraction is increased. Older solutions of phosphomolybdic acid (5-8 months old) have been now used in the preparation with good yield of the anticarcinogenic fraction.

The comparative instability of the preparation and suitable methods of administration of the preparation have given me a great deal of trouble. I have now been able to standardise the method of preparation yielding a more potent preparation. By means of fractional precipitation with caffeine the active anticarcinogenic fraction is separately precipitated. The dried precipitate is fairly stable and dissolves in solutions of alkali. Strong solutions of alkali degrade the preparation but

when the precipitate is dissolved in very dilute solutions of NaOH or in a solution of sodium benzoate just before administration (pH 5 to pH 6) there is no decrease in the anticarcinogenic potency. I have now been able to increase the stability of the preparations and to devise better methods of administration so that the preparation can now be given intravenously or intramuscularly without difficulty.—I am etc.

H. N. MUKHERJEE,
Professor of Biochemistry,
R. G. Kar Medical College,
Calcutta.

11th August, 1954
Calcutta.

REVIEWS

Atlas of Descriptive Human Anatomy—By Dr. Med. J. Sobotta. Edited and translated by Eduard Uhlenhuth, PH.D.: Vol. III. Blood Vessels, Nervous System, Sense Organs—Integument and Lymphatics. 5th English Edition, 1954. Hafner Publishing Company, Inc., New York. Pp. 390; Price £6-5-0d. Distributed by Lange, Maxwell & Springer Ltd., 242, Marylebone Road, London NWI, & 122, East 55th Street, New York 22.

Sobotta's Atlas of Human Anatomy is a classical book and widely known for nearly half a century. This well known Atlas in its present edition contains 373 illustrations—164 coloured, 142 black and white and 67 partially coloured figures. The plates, in particular the coloured ones, are beautiful and cannot be improved upon and will go a long way to help the student of anatomy both undergraduate and postgraduate to correlate basic facts with dissection. Faultlessly printed, nicely bound and beautifully illustrated with excellent figures, the book makes an attractive volume. All the illustrations are original and their reproduction excellent—the volume maintains the high standard set in previous editions. Although the text has been kept to a minimum, it is concise and adequate. For special commendation, should be mentioned the section on nervous system. The book is highly recommended to all students of anatomy to serve as an excellent guide during study of human anatomy. This book should provide a ready reference for all teachers of anatomy Pages 75 to 88 and the illustrations contained therein have been incorporated twice.

Tuberculosis in Childhood and Adolescence—By F. J. Bentey, S. Grzybowski and B. Benjamin. Published by the National Association for the Prevention of Tuberculosis, London. Price 30 shillings.

Childhood tuberculosis has not received as much attention in the past as adult tuberculosis, both from the clinicians and the epidemiologist. Moreover primary tuberculous infection in childhood was regarded as a more benign process and did not lead to progressive pulmonary disease.

The book under review is a report based on the clinical study of more than 1,000 consecutive cases of mainly the pulmonary forms of tuberculosis is childhood and adolescence treated at Highwood Hospital for Children, Brentwood, Essex and followed up after discharge for an average period of 6 years, and also of 100 unselected cases in children dying from tuberculosis in London.

Various uncertainties still remain as to the pathogenesis, manifestations and prognosis in primary tuberculosis in childhood. The present study reveals two main patterns of the disease in childhood and their ultimate fate. The main causes of death are found to be due to haematogenous spread causing miliary and meningeal disease. It is also found that this complication does not necessarily follow only the demonstrable primary lesions.

A detailed study of the so-called epituberculosis or 'atelectasis' or "collapse consolidation" type of lesions, which the authors describe as "Segmental lesions" reveals that this is due to a bronchial factor. The end result in these cases is more often permanent contraction with re-aeration rather than complete restitution.

The book includes all the statistical data in tabular form in the appendix and a large number of plates showing the various types of cases classified by the authors.

Management of various types of lesions and their prevention have also been discussed.

The book is a very valuable critical analysis of the various types of childhood tuberculosis and the conclusions reached are based on longterm observations and statistical analysis of facts. It will be a very useful guide to those who want to understand the problem of childhood tuberculosis in the light of modern knowledge.

YOUR QUESTION

Correspondents should give their names and addresses (not necessarily for publication) and include all relevant details in the questions which should be typed. Questions of medical interest only will be acceptable for this section. They should be sent in a separate envelope marked "Your Questions." Questions of general interest will be published in preference. Lack of space precludes answering of all the questions received.

Q. Has typhoid vaccine any action on the typhoid fever, when the patient has been taking chloramphenicol?

Ans. Chloramphenical, like other antibiotics, seems to be able to interfere with the proper functioning of the immunity mechanism in certain cases. Experimental evidence has suggested that one of the ways in which the antibiotics inhibit the development of immunity is by killing the organisms which supply the antigenic stimulus. If these organisms are killed too early in the disease immunity does not seem to develop, and, hence, relapses occur. In these cases of relapse, administration of small doses of a suitable vaccine should help development of immunity, which, in its turn, would augment the antibiotic action and prevent relapses. Care must, however, be taken to desist from the temptation of using too large a dose of vaccine, or administering it too frequently to provoke untoward reactions.

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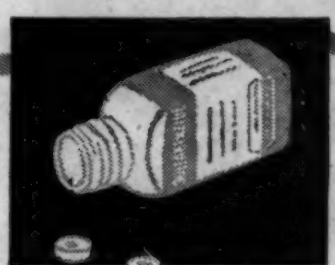

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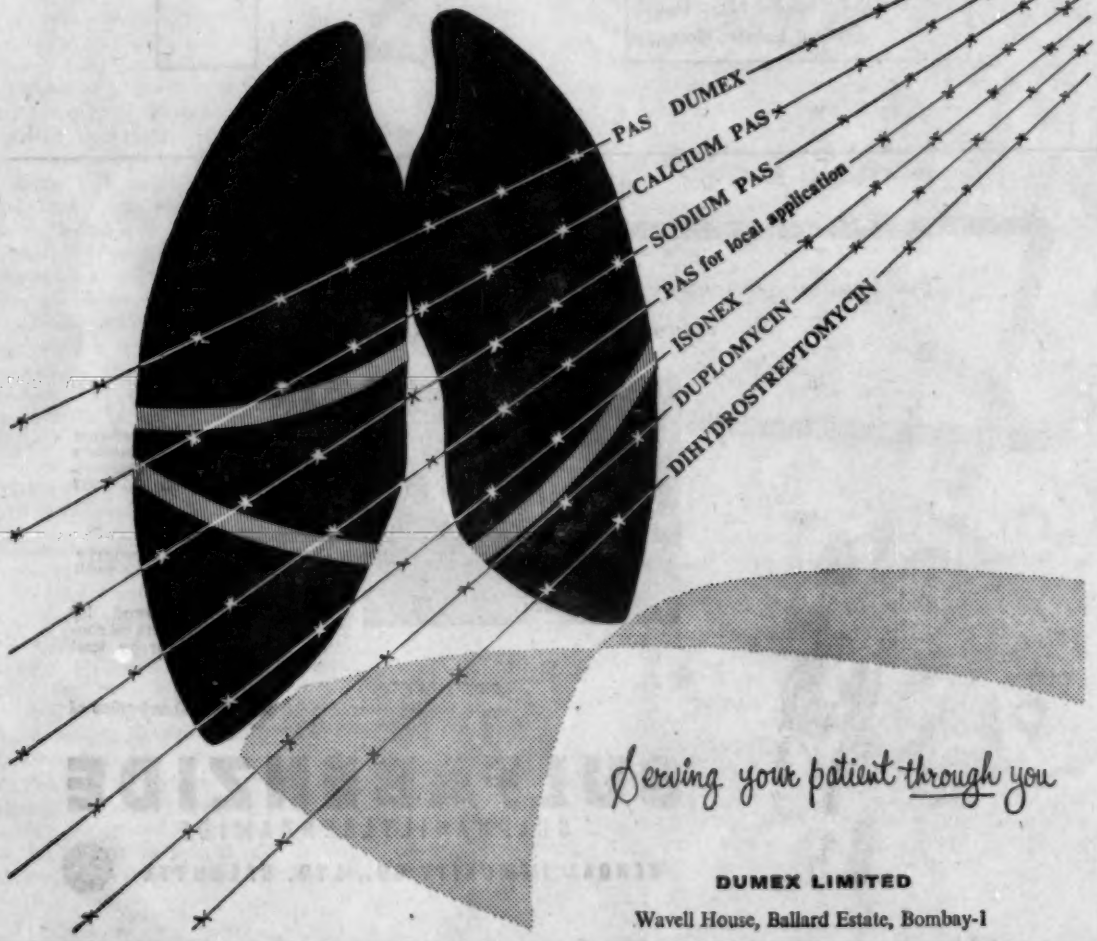

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SUPPLEMENT
Journal of the Indian Medical Association

VOL. 24, No. 2 CALCUTTA OCTOBER 16, 1954

ASSOCIATION NOTES

I. M. A. WORKING COMMITTEE

Proceedings of the 51st Meeting of the Working Committee of the Indian Medical Association held at Jaipur on 24th and 25th July, 1954.

(Subject to confirmation)

Members Present—

A. *Ex-Officio Members* :

1. Dr. S. C. Sen (New Delhi—President (In the Chair), 2. Dr. B. V. Mulay (Sholapur)—Immediate Past President. 3. Dr. D. V. Venkappa (Madras)—Senior Vice-President. 4. Dr. S. Samaddar (Patna)—Vice-President. 5. Dr. B. L. Kapur (Ludhiana)—Vice-President. 6. Dr. H. R. Dawar (Delhi)—Hony. Treasurer. 7. Dr. A. P. Mittra (New Delhi)—Hony. General Secretary. 8. Dr. J. N. Bahadur (New Delhi)—Hony. Joint Secretary. 9. Dr. A. N. Roy (Calcutta)—Hony. Joint Secretary. 10. Dr. P. K. Guha (Calcutta)—Editor, Journal, I.M.A. 11. Dr. R. Sinha (Calcutta)—Hony. Secretary, Journal of the I.M.A.

B. *Representatives from State/Territorial Branches of the Indian Medical Association.*

12. Dr. E. S. Reddy (Nellore), Andhra Prov. Branch; 13. Dr. U. B. Narayan Rao (Bombay) (in place of Dr. C. S. Patel), 14. Dr. C. S. Thakkar (Bombay), Bombay Prov. Branch; 15. Dr. J. Majumdar (Calcutta), 16. Dr. Sukomal Sen (Calcutta) (in place of Dr. P. K. Chatterjee), 17. Dr. K. K. Sen Gupta (Calcutta), 18. Dr. A. K. Bose (Calcutta), Bengal Prov. Branch; 19. Dr. Damodar Prasad (Patna), 20. Dr. A. K. Sen (Patna), 21. Dr. (Major) H. C. Mallik (Dhanbad), Bihar State Branch; 22. Dr. (Capt.) R. C. Goulatia (Delhi), Delhi Prov. Branch; 23. Dr. P. R. Trivedi (Ahmedabad), 24. Dr. A. P. Shukla (Ahmedabad), 25. Dr. S. N. Mankad (Dhoraji), Gujarat & Saurashtra Provincial Branch; 26. Dr. G. S. Melkote (Hyderabad), Hyderabad Prov. Branch; 27. Dr. G. V. Joshi (Hubli), 28. Dr. B. K. Modak (Kalyan), Maharashtra & Karnatak Provincial Branch; 29. Dr. T. A. Dorai Royan (Mysore) (in place of Dr. P. D. Krishnaswamy), 30. Dr. M. Guru Das (Mysore) (in place of Dr. T. K. Dayalu), Mysore Prov. Branch; 31. Dr. B. K. Vinchure (Nagpur), Madhya Pradesh Prov. Branch; 32. Dr. Ram Rakha Dhir (Jullunder), 33. Dr. Sain Das Vohra (Amritsar), Punjab State Branch; 34. Dr. D. G. Ojha (Udaipur), Rajputana Prov. Branch; 35. Dr. K. Rama Rao (Madras), 36. Dr. C. Nathamuni Naidu (Ambur, Vellore), 37. Dr. T. S. Balasubramanian (Trichy), S. Indian Provincial Branch; 38. Dr. K. G. Sangam (Trichur) (in place of Dr. C. O. Karunakaran) Travancore-Cochin Provincial Branch; 39. Dr. (Capt.) H. N. Shivapuri (Kanpur), 40. Dr. S. N. Saxena (Kanpur), Uttar Pradesh State Branch.

C. *Co-opted members* :

41. Dr. R. A. Amesur (Bombay), 42. Dr. F. C. Shori (Amritsar), 43. Dr. A. C. Ukil (Calcutta), 44. Dr. Hari Mohan (Dhanbad), 45. Dr. M. M. S. Siddhu (Lucknow).

D. *Invited Members* :

46. Dr. L. R. Sarin (Jaipur), 47. Dr. S. K. Menon (Jaipur), 48. Dr. R. K. Sharma (Jaipur), 49. Dr. T. S. Mathur (Jaipur).

Dr. S. C. Sen, the President, took the chair.

1. *Condolence Resolution* :

The following condolence resolution was unanimously passed, all members standing and observing silence for one minute :—

> This meeting of the Working Committee of the Indian Medical Association places on record its deep sense of sorrow at the sad demise of the following members of the Association and conveys its heartfelt sympathy to the members of the bereaved families :—
>
> 1. Dr. Murari Lal Goel (Meerut), 2. Dr. H. K. Nanavati (Ahmedabad), 3. Dr. S. T. Thyagarja Pillai (Negapatam), 4. Dr. Nandolal Sur (Jagatdal), 5. Dr. Jamuna Prasad Singh (Monghyr), 6. Dr. Chimanlal Manilal Shah (Ahmedabad), 7. Dr. R. M. Safi (Ahmedabad), 8. Dr. J. P. Mody (Ahmedabad), 9. Dr. K. K. Naidu (Jabalpore), 10. Dr. B. K. Vardya (Banaras), 11. Dr. L. R. Lalwani (Delhi), 12. Dr. R. G. Randive (Manmad), 13. Dr. N. Madhava Panicker (Trivandrum), 14. Dr. D. N. Banerji (Calcutta), 15. Dr. P. Dey (Calcutta), 16. Dr. V. Rajanna (Yeotmal), 17. Dr. D. N. Desai (Vapi), 18. Dr. M. Sundram (Calicut).

2. *Messages of inability to attend the meeting* :

Messages of inability to attend the meeting received from the following members were read :—

1. Dr. T. K. Dayalu (Bangalore), 2. Dr. P. K. Chatterjee (Calcutta), 3. Dr. C. O. Karunkaran (Trivandrum), 4. Dr. P. D. Krishnaswami (Mysore), 5. Dr. (Major) C. P. Bhat (Bhavnagar), 6. Dr. A. C. Bannerjee (Lucknow), 7. Dr. C. S. Patel (Bombay), 8. Dr. Chamanlal M. Mehta (Bombay).

3. *Confirmation of the Proceedings of the last meeting of the Working Committee held at Delhi on the 13th and 14th March 1954 (as published in the June 1954 issue of the Journal, I.M.A. and Circulated to members).*

The Proceedings of the 50th meeting of the Working Committee held at Delhi were duly confirmed.

4. *Business arising out of the Proceedings of the last two meetings* :

(1) *Patenting of the Crest of the I.M.A.—Change of design and use of Crest on the name-plates of doctors.*

Dr. A. P. Mittra, the Honorary General Secretary, read out the details of the opinions received from 37 branches regarding (1) the change of crest, (2) patenting of the crest and (3) the use of the crest on the name-plates and letter-heads.

Dr. S. C. Sen, the President, suggested that the matter had been pending since a long time and we should come to some final decision. The matter was discussed and finally votes were taken on all the three points.

By majority of votes, it was decided to maintain the status quo regarding the design of the crest. The other two points were altogether dropped. During the discussion that ensued, the Committee resolved that members of the Association should not use the crest of the Association and their Association designations in their private or professional correspondence, and that the crest and the Association designation could be used by office bearers of the Association and its branches only when dealing with matters concerning the Association.

It was decided to send a circular letter to all the branches to this effect.

(2) *Spirituous Preparations Bill (Drugs Act and Prohibition Act)* :

Dr. A. P. Mittra, the Hony. General Secretary, explained the back-ground.

Capt. H. N. Shivapuri explained the position in U.P.

Dr. Sain Das Vohra explained the position in the Punjab where 11 drugs were included, but the restrictions on the quantity allowed had since been relaxed.

Sale Tax also came in for discussion and Dr. J. Majumdar (Calcutta) objected to the levy of Sale Tax on Drugs. Dr. G. S. Melkote (Hyderabad) spoke on the subject and explained the difficulties about Sale Tax, but he thought life saving Drugs should not be taxed.

Dr. S. C. Sen, the President, suggested that the branches should pursue the matter with their respective State Governments. He also suggested that a Sub-Committee be appointed to go through the Drugs Act, Spirituous Preparations Bill and Sale Tax in a comprehensive manner. The Committee might give consolidated proposals and prepare a Memorandum and take up the matter with the Central Health Council. It was decided to get the information from all the branches on the matter and Dr. G. S. Melkote was requested to give detailed opinion on the subject. The following members were appointed to the Sub-Committee :

1. Dr. H. N. Shivapuri (Kanpur).
2. Dr. K. K. Sen Gupta (Calcutta).
3. Dr. Sain Das Vohra (Amritsar).
4. Dr. C. S. Thakkar (Bombay).
5. Dr. G. S. Melkote (Hyderabad).
6. Dr. C. Nathamuni Naidu (S. India).
7. Dr. A. P. Mittra (New Delhi)—Hony. General Secretary—Convener.

The Committee was to submit report by October, 1954.

(3) *Clarification of Item No. 7 of the Proceedings of the Working Committee held at Hyderabad-Dn. on 24th December 1954 re. application fee for Internships.*

With the permission of the President, item No. 23 of the Agenda was also taken up with this item :

23. *Statement regarding the present position about Residency Training of the I.M.A. members in U.S.A./ Canada—Permission for refund of deposits made by candidates.*

Dr. Chamanlal M. Mehta's proposal at the last meeting of the Working Committee and Dr. S. N. Mitter's notes were the basis of discussion. Dr. S. C. Sen explained the matter and the difficulties of the Central Office and also the expenses incurred in correspondence, which were much larger than the fees received.

Regarding the payment of fees, several proposals were suggested. Finally the following was agreed to by the Committee :

(1) A fee of Rs. 10/- should accompany each application received by the State Branch. The State Branch should send all the applications so received (whether recommended or not) to the Central Office. 10 per cent of the fees for all applications should be retained by the State Branch and the rest of the amount should be remitted to the Central Office.

(2) Every candidate for whom an appointment is secured would have to pay a further sum of Rs. 100/- to the Central Office on account of expenses incurred.

It was resolved that the above decisions will come into effect from the year 1954 and would apply to candidates applying in 1954 over and above the existing rules.

The matter of refund of the money to Dr. B. G. Chakravorty and Dr. J. C. Chugh was then taken up. The position of both these candidates was explained along with the note of Dr. S. N. Mitter which had already been circulated to the members.

It was decided after a discussion that Dr. Chakravorty's deposit should be forfeited. Regarding Dr. Chugh, it was decided that advice be sought from the Honorary Legal Adviser and action be taken according to his opinion.

It was further decided that the State and Territorial Branches, before forwarding and recommending applications, should satisfy themselves about the physical fitness of the candidates, after a thorough medical examination, including laboratory and x-ray examinations.

It was also approved that the selection of the next batch of candidates be held this year earlier, either in October or November and that the Selection Committee should consist of Dr. S. C. Sen (New Delhi), Dr. B. V. Mulay (Sholapur), Dr. A. P. Mittra (New Delhi) and Dr. S. N. Mitter (New Delhi).

5. (a) *Formation of New Local Branches*

Name of Local Branch	State/Territorial Branch	No. of members	Date of formation
1. Kurduwadi	M. & Karnatak	8	1-10-1953
2. Burhanpur	Madhya Pradesh	5	1-10-1953
3. Andul (Dt. Howrah)	Bengal	12	1- 4-1954
4. Bhubaneswar	Orissa	6	1- 4-1954
5. Karauli	Rajputana	9	1- 4-1954
6. Vapi	G. & Saurashtra	5	1- 4-1954
7. Jaynagar	Bihar	6	1- 4-1954
8. Dalsingsarai	Bihar	6	1- 4-1954
9. Khagaria	Bihar	7	1- 4-1954
10. Godda	Bihar	7	1- 4-1954
11. Shri Ganganagar	Rajputana	16	1- 4-1954
12. Wai Pachagani	M. & Karnatak	10	1- 4-1954
13. Mulund	Do.	7	1- 4-1954

The question of Birat Nagar Branch came up for discussion. Dr. A. P. Mittra, the Hony. General Secretary, explained the background. Discussion followed in which Dr. A. C. Ukil and Dr. R. C. Goulati took part. Dr. S. Samaddar clarified the position regarding the Birat Nagar Branch. The President pointed out that according to Rules, Indian Nationals outside Indian territory could form a branch and be directly attached to the Centre. Votes were taken on the issue and it was decided that Birat Nagar branch should remain attached to the Centre under the same name as a Direct Branch.

(b) *Revival of Branches* :

The revival of the following branches was approved of :

Local Branch	State/Territorial Branch	No. of members	Date of formation
1. Ballia	U. P.	10	1- 4-1954
2. Agra	Do.	29	1-10-1953
3. Etawah	Do.	9	1-10-1953
4. Mathura	Do.	12	1-10-1953
5. Garhwal	Do.	7	1-10-1953
6. Etah	Do.	6	1-10-1953
7. Firozabad	Do.	12	1-10-1953
8. Lakhimpur-Kheri	Do.	11	1-10-1953
9. Pilibhit	Do.	10	1-10-1953
10. Bara Banki	Do.	5	1- 4-1954
11. Madhubani	Bihar	12	1- 4-1954
12. Srinagar	Punjab	5	1-10-1953
13. Chanda	Madhya Pradesh	12	1- 4-1954

(c) The following local branch was declared suspended by the Working Committee as recommended by the State Branch concerned :

Bhowali under U. P. State Branch with effect from 1-4-54.

The following local Branches were declared "Defunct" by the Working Committee as recommended by the State Branches concerned :—

Local Branch	State/Territorial Branch	W/E/From
1. Chalisgaon	Maharashtra & Karnatak	1-10-1953
2. Vengurla	Maharashtra & Karnatak	1- 4-1954
3. Malvan	Maharashtra & Karnatak	1- 4-1954

Dr. B. V. Mulay informed the house that these branches had become "Defunct" due to the enforcement of the Bombay Public Trusts Act (1950).

6. *Consideration of C. F. C. arrears, if any* :

The question of writing off of C.F.C. arrears in respect of the South Indian and Madhya Bharat State Branches was discussed.

The Bengal representatives said that they were making efforts to realise their subscriptions and would be able to pay the amount due. The President pointed out Rule 8 where previous arrangement could be made between the Central Office, State and Local Branches. It was decided that the State Branches concerned should be made responsible for payment of Rs. 10/- and Rs. 100/- as arrears of Madhya Bharat and South Indian State Branches respectively.

At this stage, information regarding the present membership strength of the I.M.A. was given which stood up to date at 16179 out of which 7569 were Licentiates and 8610 Graduates.

7. (a) *Adoption of Audited Accounts* :

(*i*) Central Office : From 1-10-53 to 31-3-54 (Statements circulated).

(*ii*) Journal Department : From 1-10-53 to 31-3-54 (Statements circulated to members).

(*iii*) "YOUR HEALTH" for the years 1952 (January to December 1952) and 1953 (January to December, 1953). (Statements circulated to members).

(b) *Budget Estimates of "YOUR HEALTH" for the year 1954* (January to September 1954) and the Provisional Budget Estimates for the year 1954-55 (October 1954 to September 1955).

(*a*) (*i*). It was pointed out that Rs. 3,000/- ("YOUR HEALTH") be specified as "Contribution from the Government". It was also suggested that Auditors' signatures should be on every page of the audited report. A typographical error which was a sum of six figures (in respect of the amount of Rs. 48,935/4/1) was detected and this was to be erased.

The accounts of the Central Office as presented were then duly approved (proposed by Dr. R. A. Amesur and seconded by Dr. M. S. Siddhu).

a) (*ii*). *Accounts of the Journal Dept.*

It was explained that the receipt of Rs. 3,000/- ("YOUR HEALTH") was received in the last quarter of 1953.

Dr. A. K. Bose (Calcutta) asked on what basis the loans were advanced to members of the Office staff. Dr. P. K. Guha, the Editor of the Journal of the I.M.A. explained that Provident Fund is usually taken as the basis but in certain cases of emergency, the Journal Committee had to go out of their way to advance loans. Dr. Bose also wanted information on the rules governing the Provident Funds and enquired where the money had been deposited and whether exemption of income tax on provident fund deductions were arranged. Dr. R. Sinha, the Hony. Secretary of the Journal Department explained that the provident fund was in deposit with the Postal Savings Bank and the deductions being small, the question of exemption of income tax did not arise but he agreed to look into the matter. It was also decided to get a copy of the Government rules re. Provident Fund and to set up similar conditions and frame similar rules, and the advances of money be made in future according to those rules only.

The Accounts of the Journal Dept. were then accepted (proposed by Dr. B. K. Vinchure and seconded by Dr. H. N. Shivapuri).

(*a*) (*iii*). *Accounts of 'YOUR HEALTH'.*

Dr. B. K. Modak pointed out that we must take a serious view of expenses incurred in bringing out "YOUR HEALTH". Dr. Guha explained the difficulties and he expected that in the long run, the magazine was likely to become self-supporting.

The accounts of "YOUR HEALTH" were then accepted (proposed by Dr. J. Majumdar and seconded by Dr. H. N. Shivapuri).

(b) *Budget Estimates of "YOUR HEALTH".*

As these were distributed late, these were not considered at this stage.

A proposal was made and was agreed upon that all members of the Working Committee might voluntarily become subscribers of "YOUR HEALTH."

8. *Letter dated 26-1-54 of the Manager, All-India Medical Directory, Tiruvalla, Travancore, offering to print a consolidated list of doctors free of charge.*

Dr. S. Samaddar and some other members pointed out the drawbacks in accepting such an offer from the All-India Medical Directory and the proposal was rejected by the Working Committee.

9. *Letter No. Ind(A) 1 (4)/53 dated 31-12-54 of the Govt. of India, Ministry of Commerce and Industry, re. personnel of the Pharmaceutical Enquiry Committee.*

Dr. A. P. Mittra, the Honorary General Secretary, read out the Central Office letter and the reply received from the Ministry of Commerce and Industry, which were noted. It was proposed to ask for another representative of the Indian Medical Association on the Drugs Technical Advisory Board which was originally given to the British Medical Association in India.

10. *Letter No. 14/53-54 dated 5-2-54 of the Honorary Secretary, Birat Nagar Branch (Direct).*

This item was disposed of along with item No. 5.

11. *Proposal by Dr. K. A. Hamied for the formation of a Medical Pharmaceutical Council.*

This matter was deferred pending the publication of the Report of the Pharmaceutical Enquiry Committee.

12. *The Rules of the Uttar Pradesh State Branch for ratification.*

It was decided to appoint a Committee consisting of the office bearers at the Central Office and Dr. R. C. Goulatia as members which was to check up rules sent by branches for ratification. The Committee could approve of the Rules if found in accordance with the I.M.A. Rules and put up before the Working Committee for formal approval.

13. *Letter No. 597/53-54 dated 24-4-54 of the Hony. Secretary, S. Indian Provincial Branch re. suggested change in the Rules for the Central Council Representatives from Local Branches.*

It was proposed to circulate the letter to the branches for opinion and to include it in the Agenda for the next meeting of the Central Council (proposed by Dr. H. N. Shivapuri and seconded by Dr. M. S. Siddhu).

14. *Letter dated 26-4-54 of Major Khushdeva Singh, Patiala, for formation of State/Territorial Branch at Patiala.*

Dr. A. P. Mittra read out the relevant letters and the opinion of the Punjab State Branch in reply to the Central Office letter, and it was decided that a copy of the letter of Dr. Vohra, President of Punjab State Branch, be sent to the Secretary, Patiala Branch re-

questing him to let the office know about the progress in the matter and also the details of the events. It was decided that there was no objection to the formation of a Provincial Branch but it was desirable and advisable to postpone the matter till the Report of the Boundary Commission was available.

15. *Letter No. 654 dated 14-12-54 of Dr. B. V. Mulay, re. Coal Mines Labour Welfare Committees.*

The Honorary General Secretary read out the letter and also the correspondence concerning the issue.

Dr. S. Samaddar informed that a deputation had been sent to the Ministry of Labour from Dhanbad and Jharia—in spite of the fact that the Central Office was dealing with the matter.

Dr. G. S. Melkote pointed out the importance of the issue and also explained the difficulties of interfering in the matter of these coal mines or other mines in the country. He proposed that this issue should be discussed at a very high level. Dr. H. N. Shivapuri explained that the matter was particularly affecting Dhanbad and the President should try if possible, to get a representation. He remarked that Dhanbad Branch should not have by-passed the Central Office or the Provincial Branch. Dr. K. K. Sen Gupta supported Dr. Shivapuri. Dr. S. C. Sen proposed formation of a fact-finding Committee of representatives of the three State Branches concerned to explore the possibilities of action to be taken. It was decided to send the relevant portion of the minutes to the Bengal, Bihar and Madhya Pradesh State Branches.

16. *Letter No. 295/53/53-54 dated 13-12-54 of the Hony. Secretary, U. P. State Branch re. branches of the I.M.A. in countries other than U. K.*

Dr. H. N. Shivapuri explained that Indian Nationals settled abroad were wanting to start branches in some places. Dr. S. C. Sen was of the opinion that formation of temporary branches was not advisable or useful for the Association. Direct membership was possible.

The question of mailing Journals to members abroad and the extra expenditure incurred in this, came up for discussion. It was decided that for the present, same rates and rules be followed but the matter might be later reconsidered and rules drafted to be followed in future.

17. *Letter No. 45/10/53-MI dated 5-5-54 of Director General of Health Services, and Scheme for creation of new type of auxiliary medical and health workers.*

After considerable discussion in which the following members participated :

1. Dr. S. C. Sen, 2. Dr. B. V. Mulay, 3. Dr. U. B. Narayan Rao, 4. Dr. H. N. Shivapuri, 5. Dr. J. Majumdar, 6. Dr. A. N. Roy, 7. Dr. Ram Rakha, 8. Dr. S. D. Vohra, 9. Dr. A. K. Bose,

the Working Committee came to a unanimous decision that the Scheme in its present form was unacceptable and suggested to the Government to consider the Scheme prepared by the Association.

18. *Licentiates and the Medical Academy of Vienna.*

Correspondence relating to the subject was read out by Dr. A. P. Mittra, the Hony. General Secretary. A letter from the office of the Director General of Health Services was also read out.

Discussion ensued but the position was not clear. Dr. A. N. Roy was requested to write to Vienna and to get the details of the case as far as possible as to how far the interference of Government of India was responsible for the refusal to recognise the Licentiate qualifications. Dr. Chakravorty who had brought the matter to the notice of the Central Office was to be requested through Dr. Roy to send the prospectus of the Academy concerned. In the meanwhile the Central Office would also pursue the matter and make further enquiries.

19. *Enforcement of compulsory service in rural dispensaries for Medical Graduates before setting up their private practice.*

The matter was discussed in great detail by the following members :—

1. Dr. S. C. Sen, 2. Dr. A. K. Bose, 3. Dr. Ram Rakha Dhir, 4. Dr. A. C. Ukil, 5. Dr. R. C. Goulatia, 6. Dr. S. M. Siddhu, 7. Dr. F. C. Shori, 8. Dr. H. N. Shivapuri, 9. Dr. G. S. Melkote, 10. Dr. B. K. Vinchure, 11. Dr. B. V. Mulay.

The following resolution was finally adopted by the Committee :—

"Whilst the Indian Medical Association is genuinely concerned with the great need for medical relief in rural areas, it considers the proposal of the U. P. Legislature, of compulsory village medical service for a period of 5 years for all Medical Graduates before they are allowed to start independent practice as impractical, undesirable and not likely to achieve the objective; it is also of the opinion that the standard of medical education and the quality of the profession will be seriously lowered if the U. P. proposal is accepted.

The Association suggests, therefore, that for the purpose of providing sufficient number of medical men for rural medical service, the Government should :

1. provide well-equipped dispensaries and small hospital units in rural areas so that professional work of a high standard can be attained;
2. provide decent living accommodation for the medical staff;
3. offer a living wage;
4. offer extra compensatory allowances, e.g., for education of children;
5. provide for privilege and study leave;
6. select a certain percentage of students for admission into medical college, on the basis of rural requirements, giving them stipends during their career, with guarantee of employment later on, at least for three years.

20. *Matters re. the Employees' State Insurance Corporation.*

(1) Report by Dr. C. S. Thakkar on the Proceedings of the meeting of the Medical Benefit Council, E. S. I. Corporation held on 14-4-54.

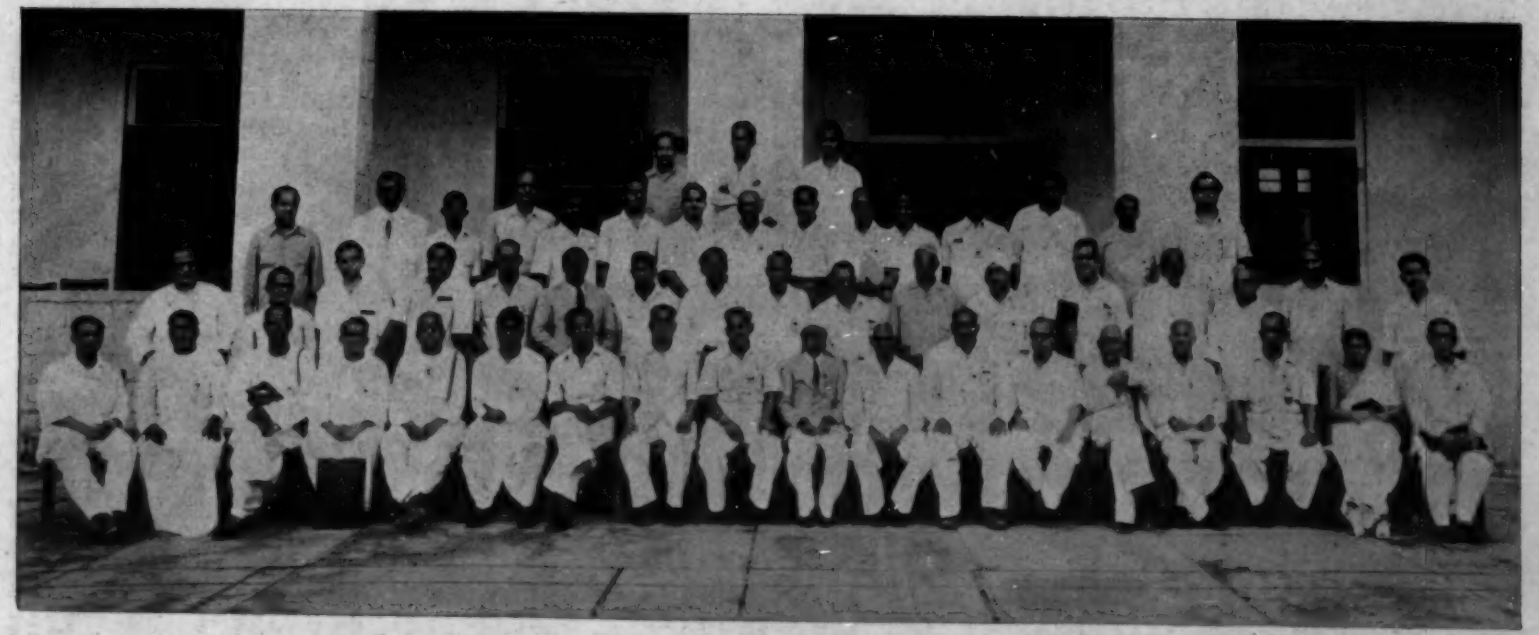
(2) Consideration of the present position of the Employees' State Insurance Scheme.

Dr. C. S. Thakkar gave a report on the last meeting of the Medical Benefit Council. He mentioned that most of the major comments and suggestions of the Indian Medical Association regarding the model rules were not accepted by the Medical Benefit Council. Regarding the various committees and the representation of the I.M.A. on the same, the Medical Benefit Council did not accept the changes proposed by the I.M.A., though assurance was given that in actual practice, the I.M.A. will be represented on such committees.

He informed further that the proposal of the I.M.A. to fix the maximum number of insured on a doctor's list as 1000, was not accepted by the Medical Benefit Council.

Dr. S. C. Sen, the President, at this stage mentioned that since the Medical Benefit Council was held, and since his further representation of 16th April, he had received information that the Standing Committee of the E. S. Insurance Corporation had accepted the proposal of the I.M.A. regarding the maximum of 1000 insured on the list of a doctor. Clarification and acceptance of various other points were received from Mr. Subramanyam in his letter D.O. No. S.S. 125/Dy 901 of 6th May, 1954, a copy of which had already been circulated to members.

Dr. Sen gave further information regarding his visit to Kasauli and to Calcutta regarding the new terms. He was of the opinion that the Punjab and the Bengal Governments were likely to accept the new proposals.



The President and Members of the Working Committee, the Office-bearers of the Rajputana State Branch and Jaipur Local Branch, I. M. A.

Dr. Sen also gave information about his interview with the Health Minister of Bombay, who had not still decided about introducing the Panel System in Ahmedabad, and Sholapur. He suggested that Ahmedabad friends should be more active in this connection.

Dr. G. S. Melkote wanted to know why the Panel System was recommended by the Indian Medical Association. As a worker for Labour, he wanted to know the reasons; he also wanted to know what would happen in areas where there are no doctors.

According to Dr. G. V. Joshi, Labour leaders wanted the Scheme to work under Government control, as medical relief formed a very small part of the Scheme, 80 per cent being related to uplift programmes.

Dr. H. N. Shivapuri dealt on the merits of the Service system which according to him was working very satisfactorily in Kanpur. He invited members to visit Kanpur and see things for themselves. He pointed out that because of bulk purchases, particularly of expensive medicines, his costs were very low indeed. Asked whether the Service doctors working the scheme were happy, he mentioned that they were not, as the allowances paid were meagre. He mentioned that he had proposed an extra allowance to be paid to these doctors.

Dr. A. P. Shukla explained that Ahmedabad branch had been very active and had not yet given up hopes of being able to convert the Government to the Panel System. He said that the profession in Ahmedabad was trying to convince the Minister and the labour.

Dr. Sen, the President, in summing up, mentioned that the Association was in favour of the Panel System —firstly because it allowed free choice of doctor to the patient, and secondly because if it did not work well, it could be scrapped and replaced by Service System, without any difficulty. To switch over from the Service to the Panel system would be more difficult if not impossible. Regarding bulk purchase, as mentioned by Dr. Shivapuri, Dr. Sen said that it could also be done under the Panel system. He mentioned further that perhaps Ahmedabad Medical Society would agree to distribute costly drugs to patients, if no other suitable and cheap arrangements could be made.

It was decided that further discussion and necessary action regarding the scheme in Bombay State, should be left to the 3 Territorial Branches and their co-ordinating committee.

21. *Letter No. DM/798/53 dated 12-5-54 from the Postmaster, General Post Office, Delhi, regarding operation of 'Employees' Provident Fund Account of the members of the Staff of the I.M.A. (Central Office).*

Dr. A. P. Mittra, the Honorary General Secretary, explained that the post office took objection to an account being operated jointly by the Honorary General Secretary and the Treasurer. It was decided to refer the matter to the highest authorities concerned and if still the authorities refused, the Honorary General Secretary was authorised to withdraw the account under his signature and put the amount in Bank. To effect withdrawal the following resolution was accepted :

"This Committee authorises the Honorary General Secretary or the Honorary Treasurer to sign and withdraw the entire amount from the Post Office and open a fresh Savings Fund Account in the Bank and deposit the money in this Account."

It was decided that after such withdrawal is executed, the same procedure of joint operation will be in force.

22. *Letter No. 5784 dated 26th March from the Agent, Imperial Bank of India, Delhi, re. operation of Bank Account.*

For the operation of the account with the Imperial Bank, the difficulties and the objections of the Bank authorities were put before the house. After some discussion, the following resolution with regard to operation of the above account was passed :—

"Resolved that the account of the Indian Medical Association will jointly be operated by the Honorary General Secretary or any one of the Honorary Joint Secretaries at Delhi, with the Honorary Treasurer."

23. *Statement re. the present position about Residency Training of the I.M.A. members in U.S.A./Canada.* Already disposed of with item No. 4 (3).

Sub-item : Fortnightly publication of the Journal and its provisional Budget.

At the outset, some objection was taken by some members about the fortnightly publication of the Journal, without previous consent of the Central Council. It was pointed out that the Central Council having accepted the previous Annual Report of the Journal Committee, had already given its approval to the fortnightly publication, whenever the time was considered opportune by the Editor and the Journal Committee.

It was pointed out by Dr. Guha that the increased cost of fortnightly publication would be met from the income from advertisements, but there may be an initial loss of about Rs. 5,000/- for the first three months. There was however every likelihood of an increase in the income from advertisements to cover any loss at the end of the year.

It was decided not to discuss the budget of the Journal Dept. but to defer it to the next meeting, as members had received the budget too late to study it properly.

Dr. Majumdar proposed that the Working Committee approves of the proposal of fortnightly publication of the Journal and that Rs. 5,000/- be sanctioned, as extra expenditure on account of fortnightly publication of the Journal for 3 months. On a point of order, about the competence of the Working Committee to sanction the extra expenditure, the President ruled that the Working Commitee was competent to do so.

Dr. Majumdar's proposal was accepted by the house.

24. *Any other business with the permission of the President.*

1. Dr. B. K. Vinchure brought to the notice of the House the ban imposed by the Madhya Pradesh Government on medical men in the State employment, joining the Indian Medical Association. He read out correspondence with the State Government since 1950 and narrated how the situation developed and culminated in the imposition of the ban.

Discussion ensued on the subject, in which the following members took part :

Dr. B. K. Vinchure, Dr. Sain Das Vohra, Dr. B. V. Mulay, Dr. S. C. Sen, Dr. J. Majumdar, Dr. G. V. Joshi.

Dr. J. Majumdar proposed that a resolution expressing serious concern over the whole matter should be passed. Steps were to be taken that no repercussions may take place in other States.

Dr. Joshi supported the move of Dr. Majumdar which was accepted and the action to be taken was left to the discretion of the President.

During the discussion was pointed out the difficulty of registration of medical men in one province not being acceptable to other provinces. This gave rise to the difficulty regarding the eligibility to the Association membership. It should be on one basis all over India, and it was decided that uniformity in rules should be established. It was also decided to take legal opinion if persons qualified from Nagpur under the short term course could become members or not and if reciprocity was also possible. It was decided to hold it over and Dr. Vinchure was requested to write to the Central office. This question might be thrashed out later.

2. Circular No. — dated 18-5-54 issued by the Hony. Editor of the Journal of the Indian Medical Association to Local and State Branches.

Regarding the circular dated 18-5-54 issued by the Hony. Editor of Journal of the I.M.A. about which certain objections had been raised by the Bengal Provincial Branch, it was decided, after some discussion, to issue instructions to branches from the Central office to treat paras 3 and 4 of the said circular as cancelled.

Acknowledgments.

The following resolutions were proposed from the chair and passed unanimously :—

1. "This meeting of the Working Committee of the Indian Medical Association places on record its deep appreciation and thanks for the hospitality and courtesy accorded to its members on the occasion of the meeting held on 24th and 25th July 1954 by :—
   1. The President, Hony. Secretary and members of the Jaipur Branch.
   2. The Rajputana Provincial Branch."
2. "This meeting of the Working Committee of the I.M.A. offers its grateful thanks to the authorities of the S. M. S. Medical College for permission to hold its meeting in the College premises at Jaipur."

With a vote of thanks, the meeting came to an end.

S. C. SEN, *President.* J. N. BAHADUR, *Honorary Joint Secretary.*

BRANCH NOTES

ALIGARH BRANCH—A meeting of the branch was held on 5-6-54 with Capt. R. S. Gupta in the chair. Fifteen members were present. It was announced in the meeting that Dr. Zakir Husain would inaugurate the next U. P. Medical Conference which would be convened on the 13th and 14th of November 1954.

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A meeting of the branch was held on 26-6-54. Twenty-three members were present. Dr. I. H. Ansari gave a talk on "Medical Study Abroad". Application for licence by medical practitioners under new Excise Rules was discussed.

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A meeting of the branch was held on 24-7-54, with Captain Hafeezur Rahman in the chair. Twenty-six doctors were present. Dr. Edibam of Dufferin Hospital, Aligarh, demonstrated a case of Pustular Nodules, Dr. Mani a case of having difficulties in using both extremities.

ANANTAPUR BRANCH—A meeting of the branch was held on 25-5-54. Dr. M. Jaffar gave an interesting lecture with demonstrations on "Management of Fractures of the Femur".

ANDHRA PROVINCIAL BRANCH—The annual report of the branch from 1-5-53 to 31-5-54, shows that membership increased from 576 to 631, though one branch discontinued functioning. The Working Committee met 4 times during this period. It is a happy news that the Andhra Government is consulting the Association in all important matters of Medical and Public Health. To do more useful work, the finances of the branch need to be improved and the best way is to increase the membership.

ARARIA BRANCH—The medical practitioners of Araria met and decided to form a branch of I. M. A. with Dr. B. Tauhid as president and Dr. L. M. Kundoo as secretary.

ASSAM STATE BRANCH—An emergent meeting of the Working Committee of the branch was held on 11-6-54 with Dr. (Mrs.) Raichoudhury in the chair. The meeting recorded its deep sense of sorrow at the sudden death of Dr. J. C. Das, the president of the State Branch.

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A meeting of the Working Committee was held on 5-7-54 with Dr. (Mrs.) T. Raichoudhury in the chair. Eight members were present. The members condoled the death of Dr. D. N. Banerjee of Calcutta at Assam Medical College. Dr. (Mrs.) T. Raichaudhury was elected president of the State Branch in place of Dr. J. C. Das, deceased. Regarding the holding of All India Medical Conference at Dibrugarh Dr. B. Barooah was entrusted with the matter. Regarding the venue of the next Assam Medical Conference, the Hony. Secretary, Shillong Branch was requested to hold the same at Shillong.

BANARAS BRANCH—A meeting of the branch was held to express its deep sense of sorrow at the sudden death of Dr. B. K. Vardya, an active member of the branch.

BARANAGORE BRANCH—A special general meeting of the branch was held on 9-5-54. Dr. R. B. Dutta was elected the president and Dr. A. K. Roy and Dr. N. C. Sanyal, joint secretaries.

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At a Working Committee meeting held on 30-5-54 with Dr. R. B. Dutta in the chair, routine business was transacted.

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A clinical meeting of the branch was held on 20-6-54. Dr. J. C. Gupta, Cardiologist, gave a talk on "Cardiac Pain and its diagnosis". Dr. P. B. Dutta presided.

BELLARY BRANCH—A meeting of the branch was held in which Dr. S. R. Gorur was elected president of the branch till the end of this official year ending 30-9-54, in place of Dr. M. J. Rajanna, resigned.

BIHAR STATE BRANCH—Dr. Samaddar, the vice-president of I.M.A. with Dr. S. M. Ghosal, the president of Bihar State Branch paid a visit to Darbhanga, Samastipore and Muzaffarpore in March 1954. This visit increased the membership of the branches. He also visited Arrah, Bettiah and Mathari, the same month. In April, he visited Kishanganj, Begusarai and Khagaria. His next programme is to pay a visit to Dalmianagar, Sahebganj and some portions of Chotanagpur. The president and secretary of the State Branch accompanied him in this tour.

CALCUTTA BRANCH—A meeting of the Executive Committee of the branch was held on 11-5-54 with Dr. N. K. Munshi in the chair. Twenty-eight members were present. The meeting at the outset expressed its deepest sense of sorrow at the sad and untimely death of Drs. Nirmal Ghosh, Dhiren Banerjee and Narapati Bose. Nine new members were admitted. One member resigned. The report of the Public Health Sub-Committee on Cholera was discussed. It was decided to take up the question of food adulteration. It was decided that the President and the Hony. Secretary will represent the branch in the Anti-Spurious Drug Committee.

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The adjourned meeting of the Executive Committee of the branch was held on 18-5-54 with Dr. S. Sen in the chair. Seven members were present. The meeting did not agree to any change in the crest and disapproved the idea of display of crest outside the clinics.

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An emergent meeting of the Executive Committee of the branch was held on 28-5-54 with Dr. N. K. Munshi in the chair. Sixteen members were present. Dr. B. C. Bose was elected to serve on behalf of this association in the Visiting Committee of the N. R. Sarkar Medical College Hospitals for another term of 3 years.

COIMBATORE BRANCH—A meeting of the branch was held on 1-5-54 with Dr. P. N. Ramaswami Naidu in the chair. Seventy-five members were present Dr. P. K. Doraiswami gave an interesting talk on "Experimental Production of Congenital Bony Defects".

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A meeting of the branch was held on 19-5-54. Thirty-three members were present. The members condoled

the untimely death of Dr. (Miss) A. Ranganayaki, a member of the branch. Members for the Allocation Committee were selected.

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A meeting of the branch was held on 27-6-54 with Dr. Y. P. Vasudevan in the chair. Fifty-five members were present. Dr. C. R. R. Pillay, Physician, Government Stanley Hospital, Madras spoke on "Cardiac Arrhythmias, Diagnosis, Prevention and Treatment".

DEHRA DUN BRANCH—An academic symposium was held on 10-4-54 under the auspices of the branch. One hundred and ten doctors took part in it. Symposium No. 1 was on Leukaemias. Dr. H. S. Maini presided and five doctors spoke on the subject. The second symposium was on Bronchiectasis. Dr. Maj. Mitra Nand presided. There were 4 speakers on the subject. There was a Section on Gynaecology and the subject was Genital Tract. Dr. Mrs. P. I. Chatterjee presided and there was one speaker. The third symposium was on "Trachoma" with Dr. S. K. Shome in the chair. There were 2 speakers. The fourth symposium on Management of Fractures, was presided over by Dr. P. D. Srivastava, there being 2 speakers. The fifth symposium on ACTH and Cortisone in Modern Medicine with 2 speakers was presided over by Dr. Durga Prasad. The sixth symposium which was the last one, was on Tonsillitis, Dr. R. M. Shama presided over it and two doctors participated.

DEORIA BRANCH—A meeting of the branch was held on 25-7-54 with Dr. S. C. Acharya in the chair. Attention of the Government was drawn to the unsatisfactory condition of medical supplies and equipment to the hospitals. The meeting also protested against the proposal of periodical renewal of medical registration charging fresh fees every time the registration is renewed.

DIBRUGARH BRANCH—A special meeting of the branch was held on 15-6-54 with Dr. P. N. Ghose in the chair. The members condoled the death of Dr. J. C. Das, the president of the Assam State Branch. After a thorough discussion it was decided in the extraordinary meeting that followed that the All-India Medical Conference could not be held at Dibrugarh in 1955.

EAST GODAVARI BRANCH—A meeting of the branch was held on 22-5-54. Dr. Radhakrishna spoke on Hypertension. Dr. Y. Venkateswarlu demonstrated a few cases of P. Conjunctivitis, Glucoma, Hypopyon Ulcer, Perforating Injury, Small-pox Ulcer, Secondary Glucoma with Hyper mature cataract. Dr. P. S. Sakuntalamma read a few case reports of broad ligamentcysto. Dr. Saraswathy gave a few instances of mistakes in diagnosis of pregnancy for ovariancysts, a tumour high up on ovariancyst mistaken for mobile kidney. He discussed the subject of Gastrojejunostomy with indications and contraindications. He demonstrated a case of adenoma of the thyroid operated, tube graft for the injury of the scalp. He also demonstrated the following X'rays, 1. Multiple Fracture of the Pelvis, 2. Fr. of the tr. process of a vertibra, 3. Depressed Fracture of the skull, 4. A fistula in the abdominal wall leading to carcum, 5. Bronchial tree.

FEROZEPORE BRANCH—A meeting of the branch was held on 27-7-54 with Dr. Raja Ram Bhola in the chair. Eighteen doctors were present. Dr. C. P. Khanna spoke on Hypertension.

GURDASHPUR BRANCH—A meeting of the branch was held on 27-6-54 with Dr. Jagjit Singh in the chair. Dr. Singh spoke on "Convulsions in childhood and infancy."

JAHANABAD BRANCH—A meeting was held on 28-3-54. Ten members were present. Dr. S. S. Lall was was elected president of the branch in place of Dr. B. K. Prasad, transferred. A discussion was held on the complication of Kala-azar and its Treatment.

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A meeting was held on 20-4-54 with Dr. S. S. Lall in the chair. Eleven members were present. Arrangements for the celebration of health week were made. Dr. A. Ahsan was elected Hony. Asst. Secretary in place of Dr. (Mrs.) K. Bhardwaj resigned.

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A meeting of the branch was held on 15-5-54 with Dr. S. S. Lall in the chair. Fourteen members were present. A case of General Anasarca was demonstrated by Dr. R. L. Verma.

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A meeting of the branch was held on 18-7-54 with Dr. S. S. Lall in the chair. Ten members were present. The members were asked to have their names registered in the National Register. The Government was requested to take vigorous action against adulteration of mustard oil and ghee. Dr. S. S. Lall gave a lecture on Sporadic Cases of Encephalitis in the local area.

MADRAS BRANCH—An Executive Committee meeting of the branch was held on 28-6-54 with Dr. P. Natesan in the chair. Two new members were admitted. Dr. P. Natesan was nominated in the Madras Telephone Exchange in place of Dr. K. C. Nambiar.

MANMAD BRANCH—A meeting of the branch was held on 27-6-54 and recorded its sense of sorrow at the sad and untimely death of Dr. R. G. Randive on 18-6-54. Dr. Randive was an active member of the branch since its inception.

PORBANDAR BRANCH—A meeting of the branch was held on 27-6-54 with Dr. H. S. Chavda in the chair. Seventeen members were present. The meeting expressed its deep sorrow at the sad death of Dr. J. P. Modi which took place at Ahmedabad on 19-6-54. Dr. Waghela read a paper on "Insomnia". X-ray plate of "Spina Bifida Occulta" was shown to the members.

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A meeting of the branch was held on 25-7-54. Seventeen members were present. Dr. K. W. Waghela read a paper on Treatment of Hemiplegia. Films on 1. This is T.B., 2. Diagnostic Procedure in Tuberculosis, were shown. A case of Rheumatic Nodules from Bhavsinhji Hospital was shown to the members.

SABARMATI BRANCH—A special meeting of the branch was held on 6-12-53 to felicitate Dr. K. R. Mehta, the retiring president. Dr. Mehta was the founder president of the branch and piloted the organisation from its inception till his retirement.

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On 14-2-54, Dr. S. C. Sen, the president of I.M.A. was invited to a dinner. An ordinary meeting was held on 11-7-54, another on 24-7-54.

SOUTH INDIAN PROVINCIAL BRANCH—A meeting of the Council of the South Indian Provincial Branch was held on 5-6-54 with Dr. K. C. Nambiar in the chair. Forty-three members were present. The members condoled the death of the following members, 1. Dr. S. T. Thiagaraja Pillai (Negapatam), 2. Dr. (Miss) A. Ranganayaki (Coimbatore), Dr. V. Sadasiva Iyer (Pudukottah). The members appreciated the excellent services of the Kadalundi Rural Medical Relief Centre. The Employee's State Insurance Scheme in the Madras State was discussed and further consideration was postponed to the next Provincial Council meeting. The Council disapproved the action of the State Government in allowing the Director of Medical services and the Dean of the Government General Hospital to be in charge of beds in the Government General Hospital, Madras.

TENALI BRANCH—A meeting of the branch was held on 29-5-54. Dr. K. Veeraiah demonstrated a case of soreness in the mouth on the right side with an enlarged and painful right submental lymph gland. Next a debate was held on "Circumcision must be made a compulsory operation".

TIRUNELVELI BRANCH—A meeting of the branch was held on 29-5-54. Thirty-seven members were present. Dr. S. Chandrasekaran spoke on "Some Observations on Pain in the Abdomen".

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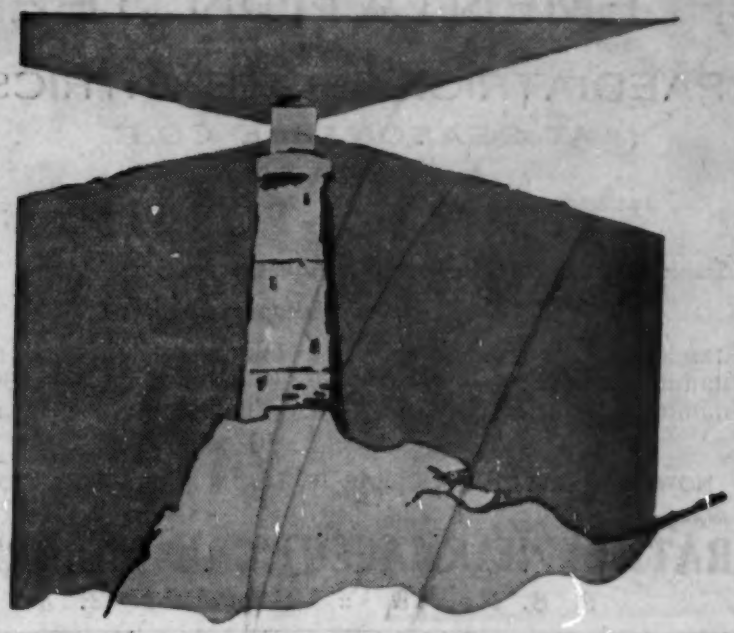

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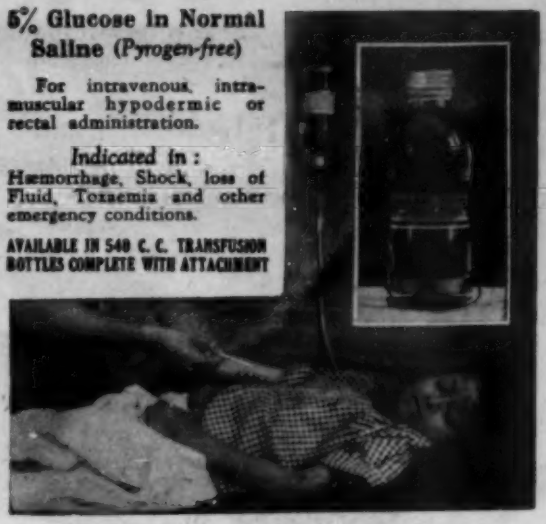

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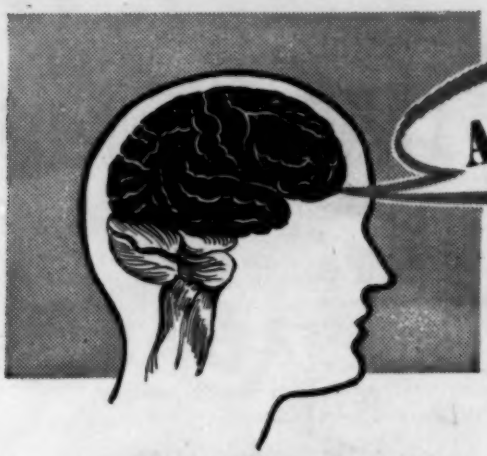

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1. Dr. S. N. Sanyal—Cal. Med. Journal (1950), 47: 313
2. Dr. S. N. Sanyal— Do. (1951), 48: 53
3. Dr. S. N. Sanyal— Do. (1952), 49: 343
4. Dr. S. N. Sanyal— Do. (1953), 50: 409, 413

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Journal of the Indian Medical Association

FORTNIGHTLY FROM OCTOBER 1954

We have much pleasure to announce that two issues of the Journal of the Indian Medical Association are being published every month, one on the 1st and the other on the 16th, with effect from October, 1954.

As General Practitioners form the bulk of the members of the Indian Medical Association, it has been decided to publish in every ordinary issue of the fortnightly, during its first year, two articles, specially written for them by experts, under a new section named " Refresher Course ".

The text of each fortnightly issue would consist of at least 32 pages.

In Special Numbers and whenever occasion arises, the reading matter would be increased as necessary.

As the membership of the Indian Medical Association has increased from October 1954, over 19,000 copies of each issue are being published from October.

The rate of subscription for the Journal has been enhanced from Rs. 18/- to Rs. 24/- per annum from October, 1954. (Foreign—Rs. 30/- post free). Bonafide medical students may, however, subscribe this Journal at a concession rate of Rs. 12/- only per annum. Members of the Association will be receiving two copies of the Journal every month, without any extra charge.

Advertisers of medical products and appliances as well as of other articles which are of use to the members of the medical profession, may avail of the opportunity of advertising their products and articles to the medical profession of India by booking space in the fortnightly issue. For further particulars in this connection, the Hony. Secretary of the Journal of the Indian Medical Association may please be contacted.

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